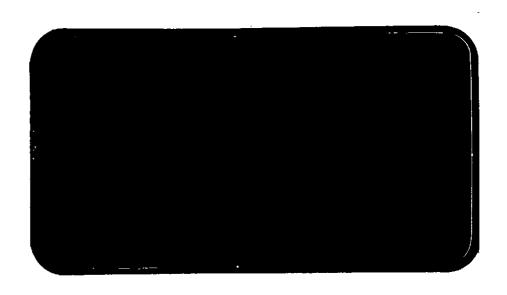


NATIONAL AERONAUTICS AND SPACE ADMINISTRATION



(NASA-CR-134103) RESULTS OF TESTS IN
THE NASA/LARC 31-INCH CFHT ON AN
0.010-SCALE MODEL (32-OT) OF THE SPACE
SHUTTLE CONFIGURATION 3 TO (Chrysler SHUTTLE CONFIGURATION 3 TO (Chrysler CSCL 22B COrp.) 276

N74-29286

Unclas G3/31 43944

SPACE SHUTTLE

AEROTHERMODYNAMIC DATA REPORT



JOHNSON SPACE CENTER HOUSTON, TEXAS

DATA MANagement services

SPACE DIVISION CHRYSLER CORPORATION

DMS-DR-2137 NASA-CR-134,103

RESULTS OF TESTS IN THE NASA/Harc 31-INCH CFHT

ON AN 0.010-SCALE MODEL (32-OT)

OF THE SPACE SHUTTLE CONFIGURATION 3

TO DETERMINE THE RCS JET FLOWFIELD INTERACTION EFFECTS

ON AERODYNAMIC CHARACTERISTICS (IA60/OA105)

VOLUME 1 OF 2

Ву

D. E. Thornton
Shuttle Aero Sciences
Rockwell International Space Division

Prepared under NASA Contract Number NAS9-13247

Ву

Data Management Services Chrysler Corporation Space Division New Orleans, La. 70189

for

Engineering Analysis Division

Johnson Space Center National Aeronautics and Space Administration Houston, Texas

WIND TUNNEL TEST SPECIFICS:

Test Number:

LaRC 31-inch CFHT-108 and 109

NASA Series Number: IA60/0A105

Model Number:

32-0T

Test Dates:

IA60: 14 through 20 Feb. 1974

OA105: 20 through 22 February 1974

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/w/N. D. Kemp

Data Management Services

Chrysler Corporation Space Division assumes no responsibility for the data presented other than display characteristics.

ON AN O.010-SCALE MODEL (32-OT)

OF THE SPACE SHUTTLE CONFIGURATION 3

DETERMINE THE RCS JET FLOWFIELD INTERACTION EFFEC

TO DETERMINE THE RCS JET FLOWFIELD INTERACTION EFFECTS

ON AERODYNAMIC CHARACTERISTICS (IA60/OA105)

By D. E. Thornton, Rockwell International Space Division

ABSTRACT

Tests were conducted in the NASA Langley Research Center 31-inch continuous Flow Hypersonic Wind Tunnel from 14 February to 22 February 1974, to determine RCS jet interaction effect on the hypersonic aerodynamic and stability and control characteristics prior to RTLS abort separation. The model used was an 0.010-scale replica of the Space Shuttle Vehicle Configuration 3. Hypersonic stability data were obtained from tests at Mach 10.3 and dynamic pressure of 150 psf for the integrated Orbiter and external tank and the Orbiter alone. RCS modes of pitch, yaw, and roll at free flight dynamic pressure simulation of 7, 20, and 50 psf were investigated. The effects of speedbrake, bodyflap, elevon, and aileron deflections were also investigated.

This report is published in two volumes. Volume 1 contains data from test IA60 and Volume 2 contains OA105 data.

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Note: See next page for Schedule of Coefficients Plotted.

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- (A) KND, KLMD, DCN, DCLM, CN, CLM versus ALPHA
- (B) KNU, KLMU, KBLU, KM, BLU, KYN, LU, DCN, DCLM, DCBL, DCYN, CN, CLM, CBL, CYN versus ALPHA
- (C) KBLU/D, KM,BL2, KYN,L2, DCBL, DCLM, DCYN, CBL, CLM
 CYN versus ALPHA
- (D) KYN, KM,YN, KBL,YN, KY, DCYN, DCLM, DCBL, DCY, CYN, CLM, CBL, CY versus ALPHA
- (E) KBLD, KM,BLD, KYN,LD, DCBL, DCLM, DCYN, CBL, CLM,
 CYN versus ALPHA

NOMENCLATURE General

		SADSAC	DIESTNIH HITON
<u>S.</u>	YMBOL.	SYMBOL	DEFINITION
	a		speed of sound; m/sec, ft/sec
	c_p	CP	pressure coefficient; $(p_l - p_{\infty})/q$
	М	MACH	Mach number; V/a
	p		pressure; N/m ² , psf
	q	Q(NSM) Q(PSF)	dynamic pressure; $1/2\rho V^2$, N/m^2 , psf
	${ m RN}/{ m L}$	RN/L	unit Reynolds number; per m, per ft
	V		velocity; m/sec, ft/sec
969 31	œ۴	ALPHA	angle of attack, degrees
4.	β	BETA	angle of sideslip, degrees
	ψ	PSI	angle of yaw, degrees
	ϕ	PHI	angle of roll, degrees
	ρ		mass density; kg/m^3 , $slugs/ft^3$
		Refe	rence & C.G. Definitions
	Ab .		base area; m ² , ft ²
	b	BREF	wing span or reference span; m, ft
	c.g.		center of gravity
	$oldsymbol{\ell}_{ ext{REF}}$	LREF	reference length or wing mean aerodynamic chord; m, ft
	s ·	SREF	wing area or reference area; m^2 , ft^2
		MRP	moment reference point
		XMRP	moment reference point on X axis
		YMRP	moment reference point on Y axis
		ZMRP	moment reference point on Z axis
			'
	SUBSCRIPTS	<u>-</u>	
	b	<u> </u>	base
		<u>i</u>	base local static conditions
	ь 1	<u>;</u>	local

NOMENCLATURE (Continued)

Body-Axis System

SYMBOL	SADGAC SYMBOL	DEFINITION
$^{\mathrm{C}}_{\mathrm{N}}$	CN	normal-force coefficient; normal force qs
$\mathbf{c}_{\mathtt{A}}$	CA ·	axial-force coefficient; axial force qS
$\mathbf{c}_{\mathbf{Y}}$	CY	side-force coefficient; side force qS
c _{Ab}	CAB	base-force coefficient; base force $\frac{\text{qS}}{\text{qS}} - A_b (p_b - p_{\infty})/\text{qS}$
$\mathbf{c}_{\mathbf{A_f}}$	CAF	forebody axial force coefficient, ${\tt C}_A$ - ${\tt C}_{A_D}$
$C_{\mathbf{m}}$	CIM	pitching-moment coefficient; pitching moment $qs \ell_{REF}$
c_n .	CYN	yawing-moment coefficient; yawing moment qSb
° ℓ	CBL	rolling-moment coefficient: rolling moment
-		Stability-Axis System
$\mathbf{c}_{\mathtt{L}}$	CL	lift coefficient; lift qS
c_D	CD	drag coefficient; $\frac{drag}{qS}$
c_{D_b}	CDB	base-drag coefficient; base drag
$\mathbf{c}_{\mathbf{D_{f}}}$	CDF	forebody drag coefficient; C_{D} - $C_{\mathrm{D}_{\boldsymbol{b}}}$
$\mathbf{c}_{\mathbf{Y}}$	CY	side-force coefficient; side force
C _m	CLM	pitching-moment coefficient; pitching moment ${}^{qS}\!\emph{l}_{REF}$
$C_{\mathbf{n}}$	CLN	yawing-moment coefficient: Yaving moment qSb
c l	CSL	rolling-moment coefficient: rolling moment
r/D	L/D	lift-to-drag ratio; $C_{\rm L}/C_{\rm D}$
$\mathrm{L/D_f}$.	L/DF	lift to forebody drag ratio: $c_{\rm L}/c_{\rm D_f}$

NOMENCLATURE (Continued)

Symbo1	SADSAC Symbol	Definition
ΔC_{A}	DCA	incremental axial-force Coefficient
$^{\Delta C} \! \ell$	DCBL	incremental rolling-moment coefficient
∆C _m	DCLM	incremental pitching-moment coefficient
ΔCN	DCN	incremental normal-force coefficient
ΔC _n	DCYN	incremental yawing-moment coefficient
ΔC _Y	DCY	incremental side-force coefficient
$^{K}\!\ell_{u/D}$	KBLU/D	amplification factor on rolling moment due to up and down firing coupled jets
$^{K}\mathcal{L}_{D}$	KBLD	amplification factor on rolling moment due to down firing jets
${}^{K}\!\ell_{u}$	KBLU	amplification factor on rolling moment due to up firing jets
Kℓ,n	KBL,YN	cross-coupling factor on rolling moment due to yaw jets
K _m D	KLMD	amplification factor on pitching moment due to down firing jets
K _m u	KLMU	amplification factor on pitching moment due to up firing jets
K_{m} , $\ell_{u/D}$	KM,BL2	cross-coupling factor on pitching moment due to up and down firing coupled roll jets
$^{K_{m}}$, ℓ_{D}	KM,BLD	cross-coupling factor on pitching moment due to down firing roll jets
K_{m,ℓ_u}	KM,BLU	cross-coupling factor on pitching moment due to up firing roll jets
K _{m,n}	KM,YN	cross-coupling factor on pitching moment due to yaw jets

NOMENCLATURE (Concluded)

K _{ND}	KND	amplification factor on normal force due to down firing jet
K _{Nu}	KNU	amplification factor on normal force due to up firing jet
$^{K_{n}}$, $\ell_{u/D}$	KYN,L2	cross-coupling factor on yawing moment due to up and down firing coupled roll jets
K_n, ℓ_D	KYN,LD	cross-coupling factor on yawing moment due to down firing roll jets
K_n , ℓ_u	KYN, LU	cross-coupling factor on yawing moment due to up firing roll jets
K _n	KYN	amplification factor on yawing moment
K _Y	КУ	amplification factor on side force
RCS		reaction control system
RTLS		return to launch site
δa	AILRON	aileron deflection angle, degrees
^δ e	ELEVON	elevon deflection angle, degrees
δf	BDFLAP	body flap deflection angle, degrees
δ _R	RUDDER	rudder deflection angle, degrees
^δ SB →	SPDBRK	speed brake deflection angle, degrees
P _C	PCRCS	model RCS air supply system plenum chamber pressure, psi

CONFIGURATIONS INVESTIGATED

Two configurations were tested. These were the second stage ascent configuration consisting of Orbiter with External Tank attached, and the RTLS configuration (Orbiter alone). The model used for this test was an 0.010-scale replica of Configuration 3 of the Space Shuttle Orbiter and External Tank.

For convenience the configuration nomenclature was abbreviated as follows: The symbols are defined in the Model Dimensional Data.

$$0 = B_{19} C_7 E_{23} F_5 M_6 N_{39} R_5 V_7 W_{107}$$

 $0T = B_{19} C_7 E_{23} F_5 M_6 N_{39} R_5 V_7 W_{107} T_{10}$

 T_{10} included the attach structure and protruberances FL7, FL8, PT16, PT17, PT18, AT21, AT22, and AT23.

Control surface effectiveness was investigated with elevon deflections of $+15^{\circ}$ and -20° , aileron deflections of $+5^{\circ}$, $+10^{\circ}$, $+15^{\circ}$, and -15° , rudder deflections of $+20^{\circ}$, bodyflap deflections of $+13.75^{\circ}$ and -14.25° , and a speedbrake deflection of 55° .

INSTRUMENTATION

**

The LaRC 0.75-inch six-component 2019C internal balance was used for this test program.

No model base pressures or balance chamber pressures were measured during this test. The RCS supply pressure was set and monitored at the plenum chambers between the two RCS nozzle blocks.

TEST FACILITY DESCRIPTION

The Mach 10 nozzle of the Langley Continuous Flow Hypersonic Tunnel is designed to operate at stagnation pressures of 15 to 150 atmospheres at temperatures up to 1960°R. Air is preheated electrically by passing through a multi-tube heater. The nozzle has a 31-inch square test section which incorporates a moveable second minimum. Continuous operation is achieved by passing the air through a series of compressors. Additional information on this facility is given in NASA TM X-1130 entitled, "Characteristics of Major Active Wind Tunnels at the Langley Research Center", by William T. Schaefer, Jr.

DATA REDUCTION

Aerodynamic forces and moments were reduced to coefficient form using the following reference dimensions:

Reference area (S) = $0.269 \text{ ft}^2 (38.736 \text{ in}^2)$ Reference Lengths

$$\bar{c}$$
 = 4.748 in (c_m)
b = 9.367 in (c_m , c_ℓ)
 c_{REF} = 12.90 in ($c_{C.p.}$)

The moments were reduced about a moment reference center located as follows:

Orbiter Only

Orbiter station 10.767 at $Y_0 = 0.00$ and $Z_0 = 3.75$

Integrated Vehicle

 \times X_T = ET. station 17.258 (7.368 inches aft of orbiter nose)

 $Y_{T} = 0.00$

 $Z_T = 6.336$ (.994 inches below orbiter FRL)

Standard LaRC data reduction techniques were used for reducing the data to coefficient form.

TEST : IA60/ 0A105			DATE :
	TEST CON	IDITIONS	
1	•		
		T].
MACH NUMBER	REYNOLDS NUMBER (per unit length)	DYNAMIC PRESSURE (pounds/sq. inch)	STAGNATION TEMPERATURE , (degrees Fahrenheit)
10.3	1.0 x 10 ⁶	1.04	1350
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		<u> </u>	
BALANCE UTILIZED:	LaRC 20	19C	
• • • • • • • • • • • • • • • • • • •	CAPACITY:	ACCURACY:	COEFFICIENT TOLERANCE:
NF	70 1bs	0.35 lbs	
SF.	25	0.125 1bs	
AF	15 1bs	<u>0.075 lbs</u>	
PM	70 in-1bs	<u>0.35_in-</u> 1bs	
RM	<u>15 in-lbs</u>	0_075_in-1bs	
YM	25 in-lbs	<u>0.125 in</u> -1bs	
COMMENTS.			
COMMENTS:	•		
		14	

RCS OFF

DATA SET			sc			ROL D			NO.			SUMM			TE IND	EPEND	ENT VA	RIABLE	: }	_
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03F	OT N.	51		Ш			-20	0	1	0	0	30								1
.04F	OTN	49 N52					Ô	15° L -15° R	1	O	O	12						<u> </u>	1	1
05F	OT N	49 NSZ					0	15° 1	1	0	O	47			Ī.:			-		1
06F		49 N52					0	5° L 5° R	ł	0	0	50		1		Ī	1	1		1
07F	OT N	49 N 52					-20	10° L	L	0	0	53						1		1
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5

RCS ON .

TEST:	IA60			DAT	A SE	T/RU	טא אי	MBER	COLL	ATIO	N SUMN	IARY		DATE	:	2-20	74		
DATA SET	CONFIGURATION	S	CHD.	CON	TROL	CEFLE	CTION	NO.	MA	CH NU	BERS (ORAL	TERNA	TE INC	EPEND	ENT VA	RIABLE	}	
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09N	OT N 52	A	1	150		0	0		0	0	23			 	 				_
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. 141	OT NA9	4	0	ıso		0	0		0	0	27				 	 	 -		\forall
1511	OT NSI .	Α	0	150	179	0	0		0	0	28				<u> </u>	 	 		1
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2011	OT NA9NSO	A	0	021			0		ŏ	0	36				-				4

α OR β

A= -100 TO . +00° IN 50 INCREMENTS

SCHEDULES

16

TABLE II - Continued

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101	ENTIFIER		α	β	700	Pc	Se	Sa	RUNS	€ bf	6 s b	RUN NO.					T		İ	T
R	HIZIN	OTN 49	A	0	150	128	-20	0		٥	0	3:6					-			1
	22.N	OT N49	Α	٥	150	446	-20	0		0	٥	37			 	-	1	1		1
	· 23N	OT N49NSZ	A	0	120	128	-20	Ó		٥	۵	38	†	 			 	1	 	┨
	2414	5311 FB14 TO	A	0	150	446	-20	ر ن		v	D	39	 		<u> </u>	 	 	<u> </u>		-
	25N	OT NSL	Α	0	150	158	-20	٥		0	0	40	 				 			┨
	2611	OTNSZ	A	0	150		-20	٥		٥	٥	41				 	 	1	 	┨
	27N	52 W 6411 TO	A	0	021			0		0	5 \$	43	 				 	 	 	┨
	1485	OT NOT NEL	A	0	1	046		0		0	55	44	ļ ——	ļ <u>-</u>		 	 			┨
	29N	OT NSZ	A	0	150	158		0		0	55	45		 -	ļ <u></u>	 	 	 	-	┨
	304	OT USE	Ą	0	150		٥	0		0	55	46					-	 	<u> </u>	4
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	3214	OT N49 N52	4	0	150			-15L +15R		0	0	48			-	 -	 			-
	331)	OT N49 N52	A	5	150		_	+54		0		51		· · - · · · · ·			 	<u> </u>		4
1	34N	OT NA9 NSZ	A	٥	150			-5R +5L		0	.0.					· ·	-	ļ		4
\neg	350	OT N49 N52	A	0	150		-20	-58 +10L			0	51	 	,			ļ		 	-
7	36 N	OT N49 NS2	A	9				- 10 R		0	0	54	· · · ·							1
+	37N	OT N49 N52	1-1	-1	150			-10 R		0	0	<u>55</u>						<u> </u>		1
+	38/V		A	0	150			#5.L -155.		<u> </u>	· 5'	/3		* 7		<u> </u>				
+		0TN49N52			150	-	0	-			_	14								1
-	39N 40N	0TN49N50			150		<u> </u>			41		15			·			, .	·	
-	744	¥ 1 14 7 1 7 8 5 0	A	0	120	76Y	0	W		<u> </u>	A	17								I

α OR β SCHEDULES

TABLE II - Continued

PCS ON TEST: TAGO DATE: 2-20-74 DATA SET/RUN NUMBER COLLATION SUMMARY SCHD. CONTROL DEFLECTION NO. MACH NUMBERS (
OF OF RUNS SOF SSB KWO. MACH NUMBERS (OR ALTERNATE INDEPENDENT VARIABLE) DATA SET CONFIGURATION IDENTIFIER OT N49 N50 A 6 150 167 0 RH/42W 0 150469 0 RUN NUMBERS a OR B SCHEDULES

EST: C)A 105	ال		DAT.	A SET	r/Ru	N NU	MBER	COLL	101TA.	N SUMM	IARY		DATE	: 2	1211	74	
DATA SET	CONFIGURATION	sc	HD.				CTION	NO. OF	МА	CH NUM	BERS (FERNA	TE IND	PEND	ENT VA	RIABLE)
DENTIFIER		<u> </u>	β	4 ∞	PC	Se	င်ရ	RUNS	Sbf	စ် နှေ	SR	NO.						T
?#201 F	ONSI	A	0	150	OFF	٥	٥		13.75	S S	0	3						
05 E	0 N52	A	0	150	DEF	0	0		-14.25	55	0	الم						
03 F	ONSI	4	٥	150	OFF	0	0		0	SS	0	25						1
64 F	0 N49N52	0	В	150	OFF	0	0		0	55	٥	28						
7.2G	O N49	A	٥	120	OFF	0	0	٠	0	55	0	31					1	
N.F	0 N52	A	٥	150	OFF	-20	٥		0	55	0	34				1		<u> </u>
976	0 N49N52	A	٥	150	OFF	0	+15L		0	55	0	39				 	1	
08F	0 N49 N S2	A	0	150	OFF		-15L		0	55	٥	41		l		 	 	
995	0 N49 N52	A	0	150	OFF		0		0		+20	43			 		<u> </u>	1
A IOE	O N49 N 52	A	٥	150	OFF	0	O		0	0	-20	45	·	•			 	
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RCS ON

TES	ST: O	4105		-	DAT	A SET	r/RU	טא א		COLL	ATIO	4 SUMI	MARY		DATE		2/21	· · · · · · · · ·		
	TA SET	CONFIGURATION				ROL 1			- OF				(OR AL	TERNA	TE IND	EPENDE	NT VA	RIABLE	}	_
		A 11.51		1		1 1			RUNS		Ssp	1	RUM NO-			<u> </u>	ļ			4
4/1	2011		A	+	150		۵	0		13.75	ಕಽ	0	4		ļ		<u> </u>		,	4
	-02N	0 NS/	A	0	120	179	٥	٥		13.15	55	٥	5		<u> </u>					
	22:	0 8151	A)	150	504	0	0		1375	55	0	6		<u> </u>					
	04N	O NAGNSZ	A	٥	150	42	0	o		1375	55	٥	7							
	05N	ONATHER	A	0	150	158	0	0		13.75	55	0	ઉ							1
	06 N	0 NA9 NEZ	A	٥	150	446	٥	0		13.75	55	0	9							1
	07 N	O N49	A	0	150	62	0	٥		13.75	5 5	٥	Ö			·.				1
	08N	0 N49	۵	0	150	158	0	0		15.75	55	0	11		 		<u> </u>	1	1	1
	Nec	0 X/49	4	0	150	446	0	0		13.15	55	0	12	·		· ·				1
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	11 N	O NSL	Α	¢	150	।इह	<u>ن</u>	()		\" ₃ ,"\"	55	۵	14			 				1
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	1611	ONSI	Æ.	ø	150	446	٥	0		-16.75	ران	ಎ	1.						1	1
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	1714	ON 49N52	Α	0	150	158	۵	O		-14.75	بادا.	٥	21						1 -	1
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A - 10 10 1 25 5 INCHIMES B= -50, -20 00 +20 +50

EST:	DA 105		-	DATA	4 SET	r/RÚ	וטא א	MBER	COLL	AOITA.	I SUMM	IARY	L	DATE	•	2/	22	
DATA SET	CONFIGURATION		нD.			EFLE		NO. OF				OR ALTE	RNA	E IND	PEND	ENT VAI	RIABLE	}
DENTIFIER		<u>a</u>		900		7	6a	RUNS	કૃષ્		Sr	RYSO.			ļ	 	ļ	
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23 N	0 N49 N SZ	0	B	ıso	446	٥	٥		۵	55	٥ -	29						
24 N	0 N49	A	0	150	446	0	0		O	55	٥	30						
25 N	0 N49	A	Ö	120	158	0	0		၁	22	٥	32						
76N	0 N 5 L	Д	٥	150	446	٥	٥		0	22	O	33						
2717	ÖNSZ	A	٥	150	446	-20	٥		٥	55	U	35			1			
28 N	O N49	A	D	150	446	-30	0		٥	55	٥	36				1	1	
731	0 N49N52	4	0	150	946	-20	٥		٥	55	٥	37			·			1
300	0 NSI	A	0		504		٥		o	SS	o	38		•,				1
31N	0 N49 N52	A	0		158	0	+15L -15R		٥	55	: 0	40						
32 N	0 M49 N52	A	o	150	321	0	-15L +15R		٥	55	Ö	42		-			1.	
33N	0 N49 NSL	A	0	150	158	٥	0		0	0	+20	44						
. 34 N	0 N 49 N 52	A	0	120	158	0	0		O	0	-50	46						
35N	O NSI	25	0	150	C	0	0.		0.	55	O.	ક્છ		-				
36N	O N49 N50	2.5	0	150	С	0	0		0	55	0	- 47						
371/	0 N 49 NSO	25	Ċ	75	C	0	٥	,	0	55	0	48						
1 38N	. ONSI	25	0	75	c	0	0		0	55	0	47						
	•								•									
											C-PC							

5"-10,00,460,480

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SCHEDULES

TABLE III. - MODEL DIMENSIONAL DATA

MODEL COMPONENT: ATTACH STRUCTURE - AT21	
GENERAL DESCRIPTION: Attach structure, sam	me as AT _{ll} except only the
forward attach structure.	
MODEL SCALE: 0.010	
DRAWING NO.: VL72-000089	
DIMENSIONS:	FULL SCALE MODEL SCALE
Orbiter to Tank	
Location- In.	
X _T	382.000 3.820
X _{pp.}	1133.000 11.330

GENERAL DESC	CRIPTION: Right rear, Orbiter to H	External Tank	
MODEL SCALE:	0.010		
DRAWING NO.:	VL72-000088B + VL72-000089 NOTE:	Use first draw and second draw of struts	ring for location wing for detail
DIMENSIONS:	•	FULL SCALE	MODEL SCALE
Fir	st strut		
	Diameter - In. (Approx.)	8.0	0.08
	Aft Location, In. (Attach to Orbiter	·)	
	X _o	1307.0	13.070
	$\mathbf{x_{T}}$	2058.0	20.580
	Fwd Location - In. (Approx.) (Attach to Orbiter)		
	x _o	1108.0	11.080
	$\mathbf{x_{r}}$	1859	18.59
	NOTE: This strut is the mirror imag	ge	
Sec	ond Strut		•
	Diameter, In. (Approx.)	8.0	0.08
	Location - In.		
	x_{o}	1307.0	13.070
	$\mathbf{x_T}$	2058	20.580

MODEL COMPONENT: ATTACH STRUCTURE - AT		
GENERAL DESCRIPTION: Left rear, Orbiter to Exte	rnal Tank	
MODEL SCALE: 0.010		· · · · · · · · · · · · · · · · · · ·
DRAWING NO.: VL72-000088B & VL72-000089 NOTE		wing for location awing for detail
DIMENSIONS:	FULL SCALE	MODEL SCALE
Forward attach points:	,	
Orbiter to Tank		•
No. of struts	_1	
Diameter - In. (Approx)	8.0	0.08
Location - In.		
x _o	1307	13.070
ХŢ	2058	20.580
Aft attach points:		
Location - In. (Approx.)	•	
x _o	1108	11.080
$\mathbf{x_{T}}$	1859	18.590

MODEL COMPONENT : BODY - BL9		
GENERAL DESCRIPTION: Fuselage, Co	onfiguration 3 per H	Rockwell
Lines VL70-000139B.		
NOTE: Identical to By except fore	oody.	
MODEL SCALE: 0.010		
DRAWING NUMBERVT.70-000139B		
DIMENSIONS	FULL SCALE	MODEL SCALE
Length - In.	1290.3	12.903
Max Width - In.	267.6	2.676
Max Depth - In-	244.5	2.445
Fineness Ratio	4.82175	4.82175
Ateo - Ft ²		
Max. Cross-Sectional	386.67	0.0387
Planform		
Wetted		
Base		

MODEL COMPONENT : CANOPY -	C ₇	
GENERAL DESCRIPTIONConfigure	tion 3 per Rockwell 1	<u> Lines VL70-0001</u> 39.
MODEL SCALE: 0.010		
DRAWING NUMBER		
		•
DIMENSIONS :	FULL SCALE	MODEL SCALE
Length ($X_0 = 433$ to $X_0 = 578$) I	n.F.S. <u>145</u>	1.450
Max Width		
Max Depth	***************************************	
Fineness Ratio		
Area		<u> </u>
Max. Cross-Sectional		
Planform		
Wetted		
Base		

MODEL COMPONENT: ELEVON - E23		
GENERAL DESCRIPTION: Configuration 3 pe	r W ₁₀₇ Rockwell Lin	es Drawing
VI.70-000139B. Data for (1) of (2) sides.		
MODEL SCALE: 0.010		
DRAWING NUMBER: VL70-000139B		
DIMENSIONS:	FULL-SCALE	MODEL SCALE
Area _{- Ft} ²	205.52	0.0206
Span (equivalent) - In.	353.34	3.533
Inb'd equivalent chord - In.	114.78	1.148
Outb'd equivalent chord- In.	_55.00	0.550
Ratio movable surface chord/ total surface chord		
At Inb'd equiv. chord	0.208	0.208
At Outb'd equiv. chord	0.400	0.400
Sweep Back Angles, degrees		
Leading Edge	0.00	_0.00
Trailing Edge	-10.24	- 10.24
Hingeline	0.00	0.00
Area Moment (Normal to hinge line) -Fi	t ³ 1548.07	_0.00155

MODEL COMPONENT BODY FLA	P- F ₅	
GENERAL DESCRIPTION : 3 Conf	iguration per Rockwell	Lines VL70-000139
MODEL SCALE: 0.010		
DRAWING NUMBER VL70-000130	2	
DIMENSIONS	FULL SCALE	MODEL SCALE
Length - In.	84.70	0.847
Max Width - In.	267.6	2.676
Max Depth		-
Fineness Ratio	***	
Area - Ft ²		·
Max. Cross-Sectional		
Planform	142.5	0.0143
Wetted		,
Base	38.0958	0.0038

MODEL COMPONENT: FEEDLI	NE - FL-7	·		
GENERAL DESCRIPTION:	LOX feedline	between ET	and Orbiter	
MODEL SCALE: 0.010				
DRAWING NO.: VL78-00005	0			•
DIMENSIONS:			FULL SCALE	MODEL SCALE
Centerline at:	$\mathbf{x_{T}}$		2081.0	20.810
•	YT		70.0	0.70
	x _o		1330.0	13.300
	Yo		70.0	0.700
Diameter			18.5	0.185

MODEL COMPONENT: FEEDLINE	- FL ₈		
GENERAL DESCRIPTION: L	H2 feedline between	en ET and Orbiter	
MODEL SCALE: 0.010			
DRAWING NUMBER: VL78-0000	50		
DIMENSIONS:		FULL SCALE	MODEL SCALE
Centerline at:	$\mathbf{x_{T}}$	2081.0	20.810
-	Ym	<u> </u>	- 0.700
	x _o	1330.0	_13.300
ı	Yo	- 70.0	- 0.700
Diameter		_ 18.5	0.185

MODEL COMPONENT : OMS POD - MG		
GENERAL DESCRIPTION : Basic configura	tion 3A OMS pod	ls with non-
metric RCS engine housing and nozzles.	Same geometry	as M ₄
MODEL SCALE: 0.010		
DRAWING NUMBER VI.70-000139B		
		- ·
DIMENSIONS	FULL SCALE	MODEL SCALE
Length - In.	346.0	3.460
Max Width - In.	108.0	1.080
Max Depth - In.	113.0	1.130
Fineness Ratio	· · · · · · · · · · · · · · · · · · ·	
Area		· · · · · · · · · · · · · · · · · · ·
Max. Cross—Sectional		
Planform		·
Wetted		
Bose		
Station of aft end of RCS nozzle block	1560.0	15.600

EL COMPONENT: MPG NOZZLES - N 39			
GENERAL DESCRIPTION: Configuration 3A MPS Nozzles			
			·
MODEL SCALE: 0.010			
DRAWING NUMBER:			
DIMENSIONS:		FULL SCALE	MODEL SCALE
MACH NO.			
Length - In. Gimbal Point to Exit Plane Throat to Exit Plane		·	
Diameter - In. Exit Throat Inlet		94.000	<u> </u>
Area - ft ² Exit Throat		48.193	0.0048
Gimbal Point (Station) – In. Upper Nozzle X Y Z			
Lower Nozzles X Y Z	<u>+</u>	1462.0 53.000 +	14.620 0.530 3.427
Null Position - Deg. Upper Nozzle Pitch Yaw			
Lower Nozzle Pitch Yaw			

MODEL COMPONENT: RCS NOZZLE - N ₄₉		
GENERAL DESCRIPTION: RCS nozzle providing left	-hand pitch-down	control to
simulate return to launch site (RTLS)		
MODEL SCALE: 0.010	,	
DRAWING NO.: SS-A01160-19		
DIMENSIONS:	FULL SCALE	MODEL SCALE
Flight dynamic pressure simulation - PSF	20	20
Cant angle - Deg.		•
Aft	12	_12
Outboard	20	_20
Diameter - In.		
Exit	14.10	0.141
Throat	6.70	0.0670
Area - In ²		·
Exit	156.14	0.015614
Throat	35.25	0.003525
Area ratio	4.430	4.430
No. of Nozzle	2	2

		ucu,
MODEL COMPONENT: RCS Nozzles - N50		
GENERAL DESCRIPTION: RCS Nozzle providing right	t-hand pitch-d	own control
to simulate return to launch site (RTLS).		
MODEL SCALE: 0.010		
DRAWING NO.: SS-A01160-20		
DIMENSIONS:	FULL SCALE	MODEL SCALE
Flight dynamic pressure simulation - PSF	20	20
Cant angle - deg.		
Aft	12	12
Outboard	20	20
Diameter - In.		
Exit	14.10	0.141
Throat	6.70	0.0670
Area - In. ²		
Exit	15.614	0.015614
Throat	35.25	0.003525
Area Ratio	4.430	4.430
No. of Nozzles	2	2

MODEL COMPONENT: RCS NOZZLES - N51			
GENERAL DESCRIPTION: RCS Nozzle providing left-hand yaw co	ontrol to		
simulate return to launch site (RTLS).			
MODEL SCALE: 0.010			
DRAWING NO.: SS-A01160-11			
DIMENSIONS:	MODEL SCALE		
Flight dynamic pressure simulation- PSF	_20		
Cant angle - Deg.			
Aft	0		
Outboard	0		
Diameter - In.			
Exit	0.141		
Throat	0.0670		
Area - In. ²			
Exit	0.015614		
Throat	0.003525		
Area ratio	4.430		
No. of nozzles	4		

MODEL COMPONENT: RCS NOZZLE - N52	
GENERAL DESCRIPTION: RCS Nozzle providing right-hand pi	tch-up control
to simulate return to launch site (RTLS).	A
MODEL SCALE: 0.010	
DRAWING NO.: SS-A01160-12	
DIMENSIONS:	MODEL SCALE
Flight dynamic pressure simulation - PSF	20
Cant angle- deg.	
Aft	0
Outboard	0
Diameter - In.	
Exit	0.141
Throat	0.0670
Area - In. ²	
Exit	0.015614
Throat	0.003525
Area ratio	4.430
No. of nozzles	2

MODEL COMPONENT: ET PROTUBERANCE - PT16		
GENERAL DESCRIPTION: LOX vent line fairing		
MODEL SCALE: 0.010		
DRAWING NO.: VL78-00003LA		•
DIMENSIONS:	FULL SCALE	MODEL SCALE
Leading edge at $X_{\mathbf{T}}$	322.0	3.210
$\mathbf{x_{T}}$	0.0	0.0
Trailing edge at X_{T}	955.0	9 .5 5
$\mathbf{Y_{T}}$	70.0	0.70

MODEL COMPONENT: ET PROTUBE	RANCE- PT ₁₇		
GENERAL DESCRIPTION: LOX fee	edline fairing		
MODEL SCALE: 0.010			
DRAWING NO.: VL78-000031A			
DIMENSIONS:	•	FULL SCALE	MODEL SCALE
Leading edge at:	$\mathbf{x_{T}}$	955.0	9.55
	YT	70.0	0.70
Trailing edge at:	X _T	2058.0	20.58
n	YŢ	70.0	0.70

MODEL COMPONENT: ET PROTUBI	ERANCE - PT ₁₈		
GENERAL DESCRIPTION: LH2 1	vent line fairing		
			· · · · · · · · · · · · · · · · · · ·
-			
MODEL SCALE: 0.010			
DRAWING NO.: VL78-000031A			
DIMENSIONS:		FULL SCALE	MODEL SCALE
Leading edge at:	$\mathbf{x_{T}}$	947.0	9.47
	Y _T	- 70.0	- 0.70
Trailing edge at:	X _T	2058.0	20.58
	Ϋ́m	<u>- 70.3</u>	- 0.700

TABLE III. - MODEL DIMENSIONAL DATA - Continued. MODEL COMPONENT: RUDDER - Rs GENERAL DESCRIPTION: 2A, 3, 3A and 140A/B configurations MODEL SCALE: 0.010 DRAWING NUMBER: VL70-000146A, VL70-000095, VL70-000139 DIMENSIONS: FULL-SCALE MODEL SCALE Area - Ft² 106.38 0.011 Span (equivalent) - In. 2.010 Inb'd equivalent chord - In. 91.585 0.916 Outb'd equivalent chord - In. 50.833 0.508 Ratio movable surface chord/ total surface chord At Inb'd equiv. chord 0.400 0.400 At Outb'd equiv. chord 0.400 0.400 Sweep Back Angles, degrees Leading Edge <u> 34.83</u> Trailing Edge 26.25 Hingeline <u>34.83</u> 34.83

0.00053

Area Moment (Normal to hinge line) - Ft3 526.13

MODEL COMPONENT : EXTERNAL TANK -	Tio	
GENERAL DESCRIPTIONExternal Oxy	gen-Hydrogen Tank,	3 configuration
per Rockwell Lines drawing VL78-000041 and	VL72-000088	
		· · · · · · · · · · · · · · · · · · ·
MODEL SCALE: 0.010		
DRAWING NUMBER : VL72-000088, VL78-	-000041	
		,
DIMENSIONS	FULL SCALE	MUDEL SCALE
Length (Nose @ $X_T = 309$)	1865	18.65
Max Width - In.	324	3.24
Max Depth		
Fineness Ratio	5.75617	5.75617
Area Ft ²		·
Max. Cross-Sectional	572,555_	0.0573
Planform		
Wetted		
Base	·	
W.P. of tank centerline (X_m) In	n. 400.0	4.000

MODEL COMPONENT: VERTICAL - V 7		
GENERAL DESCRIPTION: <u>Centerline vertical tail</u> ,	double-wedge	airfoil with
rounded leading edge.		
NOTE: Same as V, but with manipulator housi	ng removed.	
MODEL SCALE: 0.010		·
DRAWING NUMBER: VI.70-000139		
DIMENSIONS:	FULL SCALE	MODEL SCALE
TOTAL DATA		
Planform Span (Theo) - In. Aspect Ratio Rate of Taper Taper Ratio Sweep-Back Angles, Degrees. Leading Edge Trailing Edge 0.25 Element Line Chords: Root (Theo) WP Tip (Theo) WP MAC Fus. Sta. of .25 MAC W.P. of .25 MAC B.L. of .25 MAC	425.92 315.72 1.675 0.507 0.404 45.000 26.249 41.130 268.50 108.47 199.81 1463.50 635.522 0.00	0.0426 3.157 1.675 0.507 0.404 45.000 26.249 41.130 2.685 1.085 1.998 14.635 6.355 0.00
Airfoil Section Leading Wedge Angle - Deg. Trailing Wedge Angle - Deg. Leading Edge Radius	10.000 14.920 2.0	10.000 14.920 0.02
Void Area - Ft ²	13.17	0.0013
Blanketed Area	0.00	_0.00

MODEL COMPONENT: WING-W107	Older Marin - Colic	rudeu.
SENERAL DESCRIPTION: Configuration 3 per Rockwell	Lines VI70-0001	39B
NOTE: Same as Wasse except cuff, sirfoil and inci	dence angle.	
105		··
MODEL SCALE: 0.010		
TEST NO.	DWG. NO. y	L70-000139B
DIMENSIONS:	FULL-SCALE	MODEL SCALE
TOTAL DATA Area (Theo.) Ft ²		
Area (Theo.) Ft ²	2690.0	0.269
Span (Theo In.	936.68	9.367
Aspect Ratio	2.265	2.265
Rate of Taper	<u> </u>	- 147
Taper Ratio Dihedral Angle, degrees	0.200 3.500	0.200
Incidence Angle, degrees	0.500	0_500
Aerodynamic Twist, degrees	+.3.000	t_3_000
Sweep Back Angles, degre-		
Leading Edge	45.000	45-000
Trailing Edge 0.25 Element Line	- 10.24	- 10.24
Chords:	35-209	35-209
Root (Theo) B.P.O.O.	689.24	6.892
Tip, (Theo) B.P.	1.37.85	1.379
MAC	474.81	4.748
Fus. Sta. of .25 MAC W.P. of .25 MAC	1136.89	11.368
B.L. of .25 MAC	299.20 182.13	2.992 1.821
Area (Theo) Ft ²	1752.29	0.1752
Span, (Theo) In. BP108	720.68	7.207
Aspect Ratio	2.058	2.058
Taper Ratio	0.2451	0.2451
Chords Root BP108	562.40	5.624
Tip 1.00 b	137.85	1.379
7		
MAC	393.03	3.930
Fus. Sta. of .25 MAC W.P. of .25 MAC	1185.31 300.20	11.853 3.002
B.L. of .25 MAC	251.76	2.518
Airfoil Section (Rockwell Mod NASA)		
XXXX-64	2.12	
Root b ≠	0.10	0.10
Tip <u>b</u> =	0.12	0.12
<u>7</u>		
Data for (1) of (2) Sides		
Leading Edge Cuff 2 Planform Area Ft2	118 222	0.0729
Leading Edge Intersects Fus M. L. @ Sta	-118-333 500-0	<u>0.0118</u> 5.000
Leading Edge Intersects Wing @ Sta	1083.4	10.834
43		

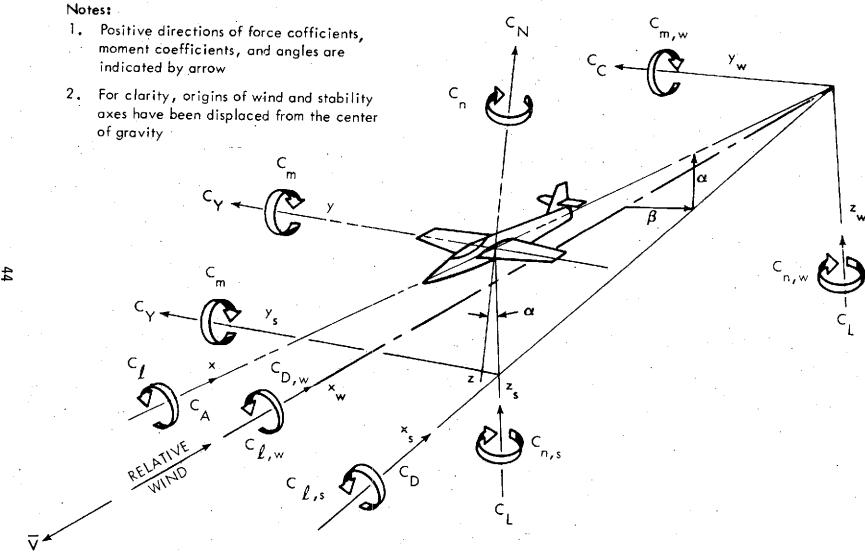
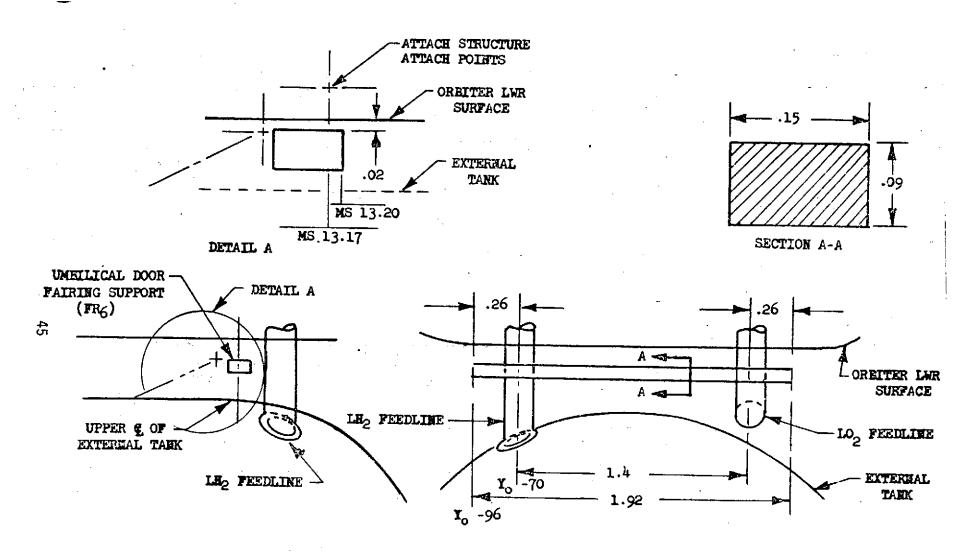
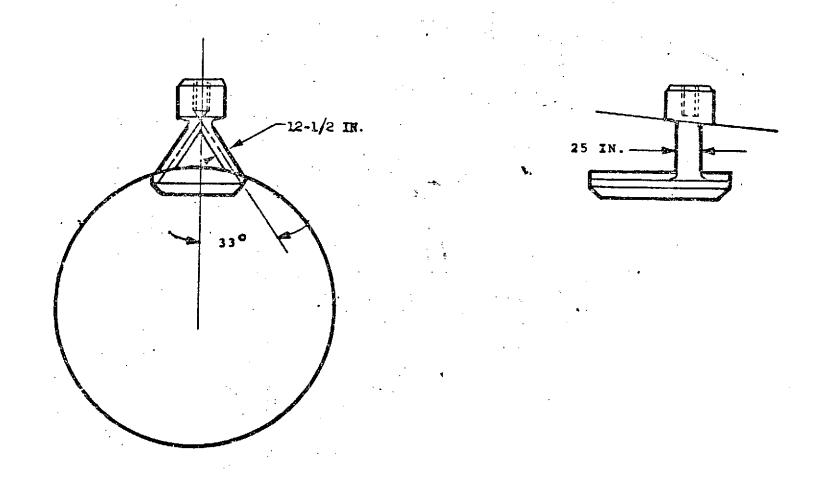


Figure 1. - Axis systems.



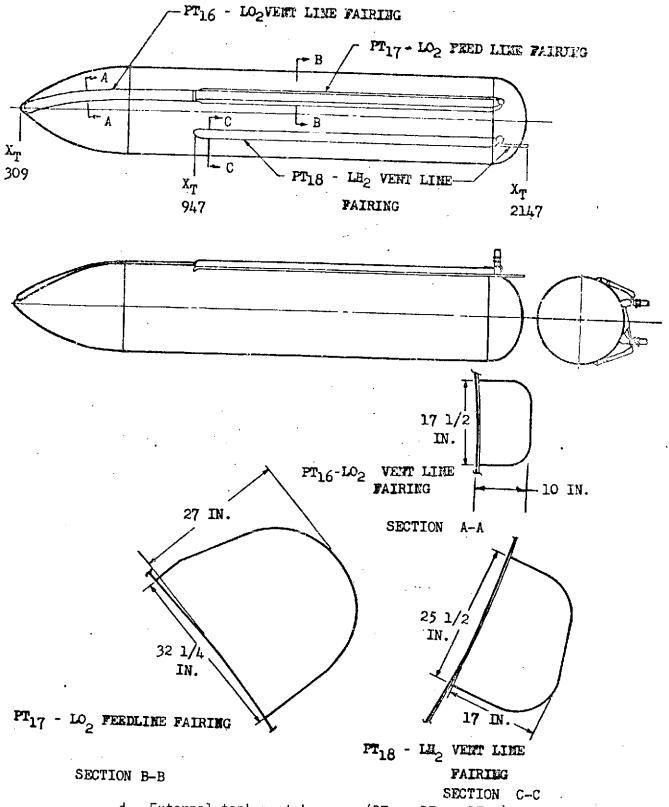
HOTE: ALL DIMENSIONS ARE APPROXIMATE AND IN INCHES

a. Orbiter umbilical door fairing support (FR $_6$) and LO $_2$ (FL $_7$) and LH $_2$ (FL $_8$) Feedlines Figure 2. - Model Sketches.



b. Forward attachment of the external tank to the orbiter (AT $_{21}$) Figure 2. - Continued.

Aft attachment of external tank to orbiter $(AT_{22,23})$ Figure 2. - Continued.



d. External tank protuberance (PT_{16} , PT_{17} , PT_{18}) Figure 2. - Concluded.

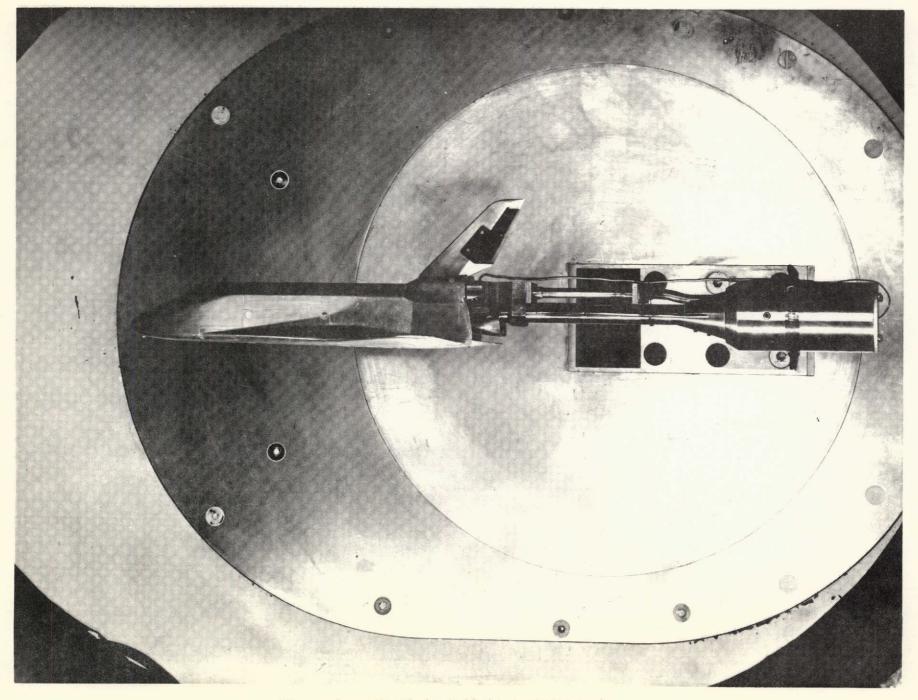
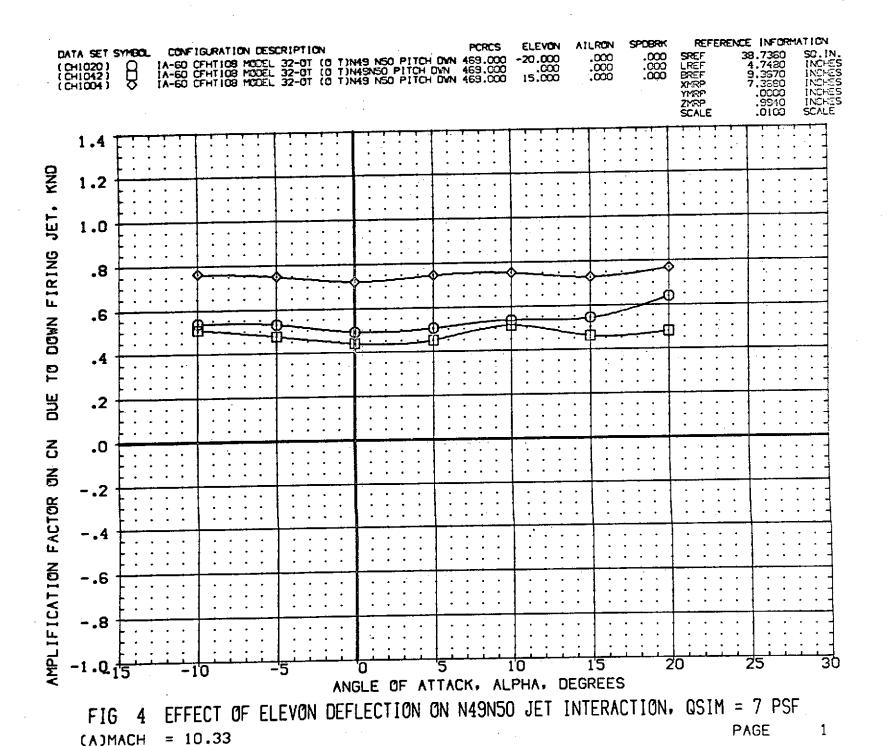


Figure 3. - Model installation photograph.

DATA FIGURES



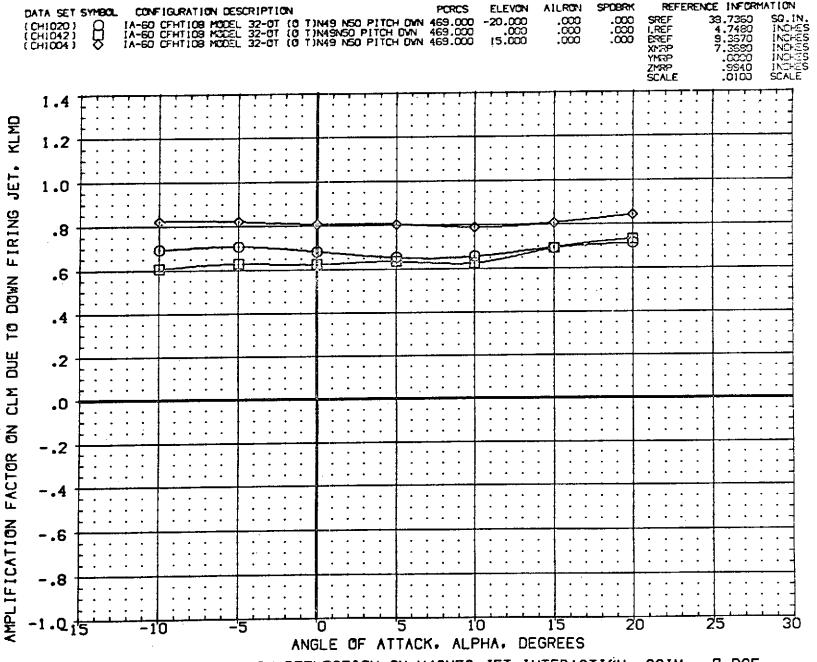


FIG 4 EFFECT OF ELEVON DEFLECTION ON N49N50 JET INTERACTION, QSIM = 7 PSF

(A)MACH = 10.33

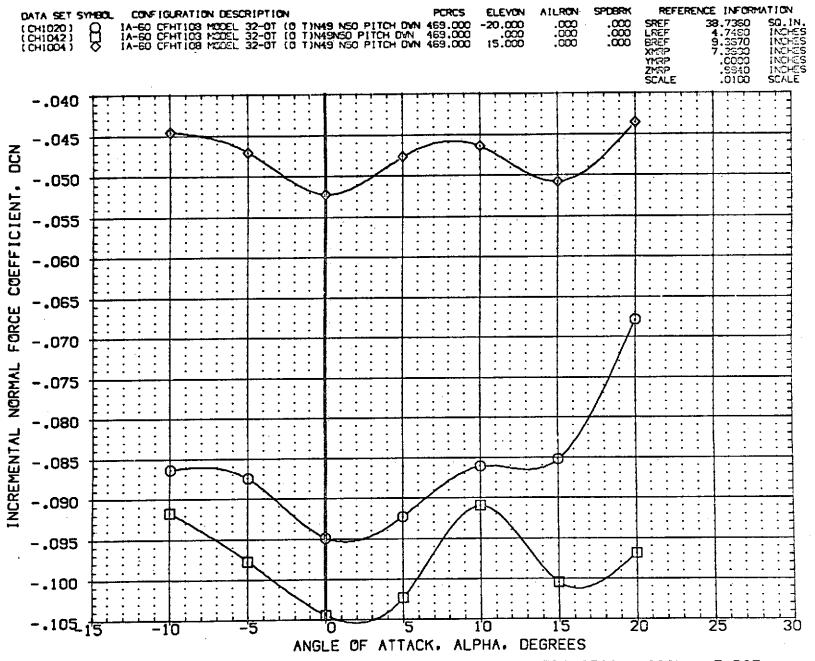


FIG 4 EFFECT OF ELEVON DEFLECTION ON N49N50 JET INTERACTION, QSIM = 7 PSF
(A)MACH = 10.33

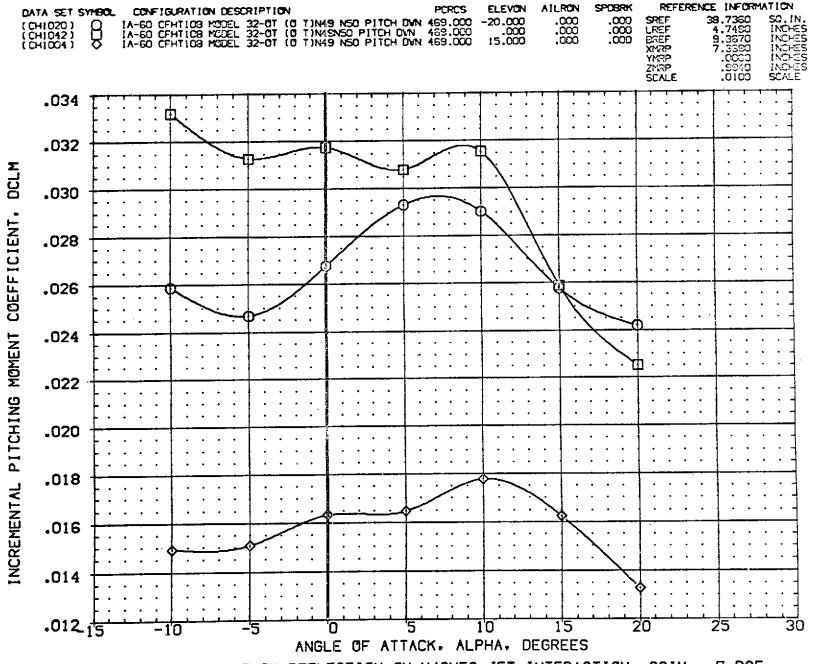


FIG 4 EFFECT OF ELEVON DEFLECTION ON N49N50 JET INTERACTION, OSIM = 7 PSF

(A)MACH = 10.33

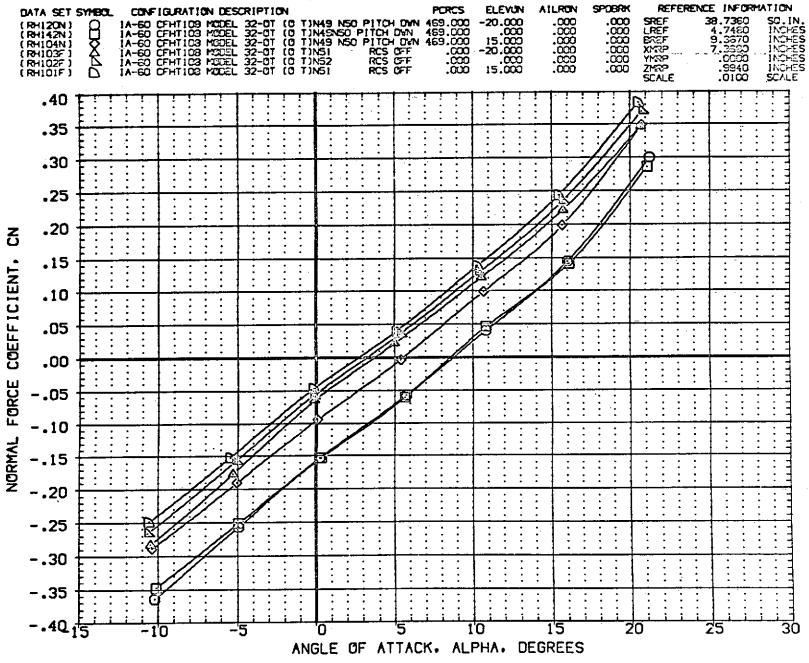


FIG 4 EFFECT OF ELEVON DEFLECTION ON N49N50 JET INTERACTION, QSIM = 7 PSF
(A)MACH = 10.33

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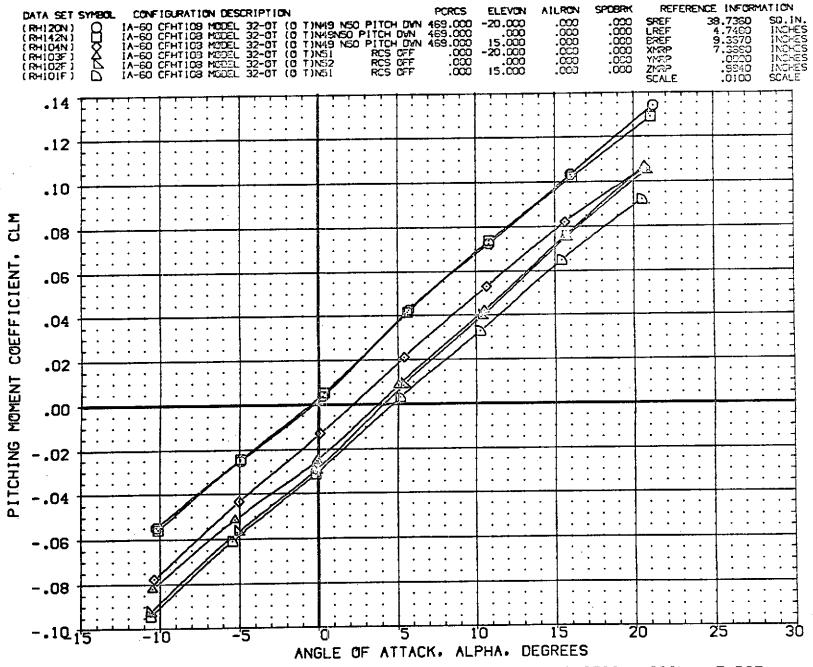


FIG 4 EFFECT OF ELEVON DEFLECTION ON N49N50 JET INTERACTION, QSIM = 7 PSF

(A)MACH = 10.33

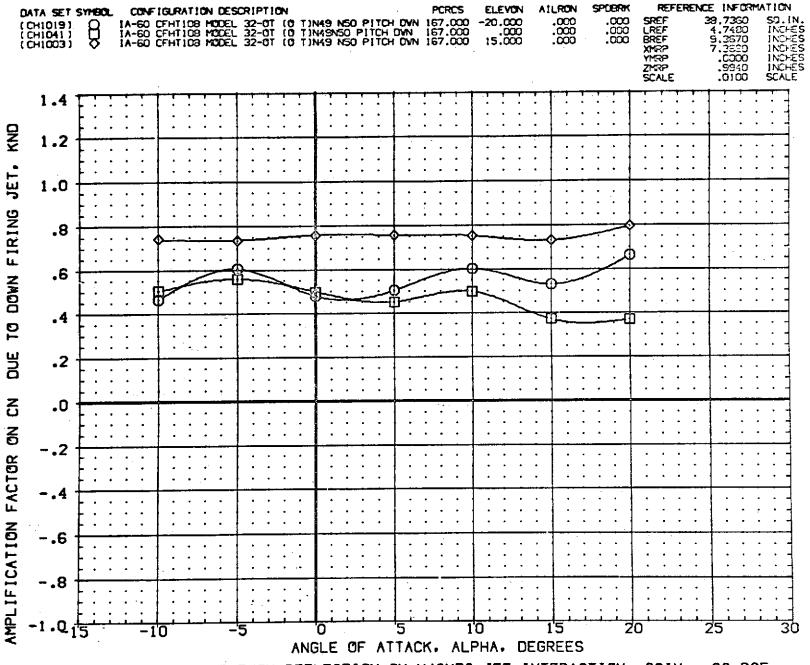


FIG 5 EFFECT OF ELEVON DEFLECTION ON N49N50 JET INTERACTION. QSIM = 20 PSF
(A)MACH = 10.33
PAGE

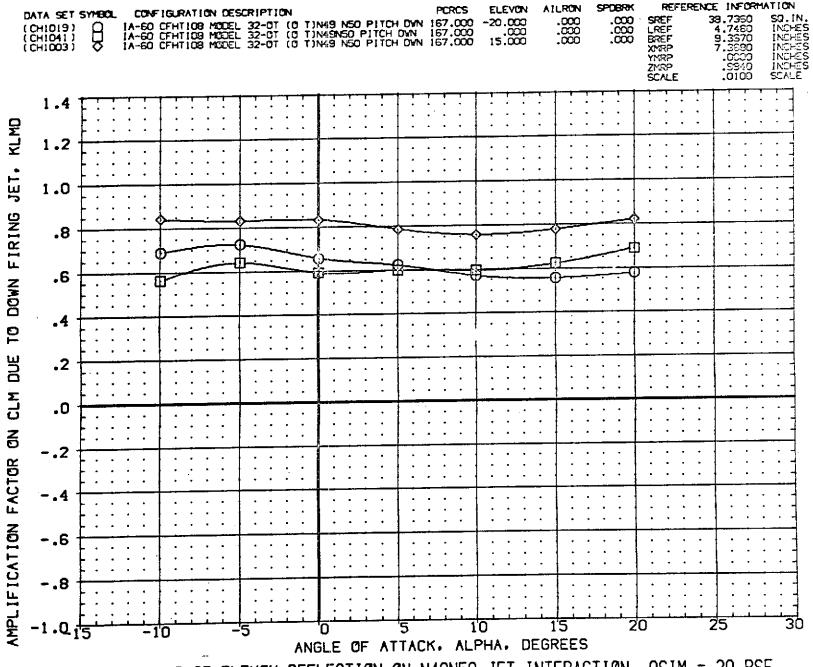


FIG 5 EFFECT OF ELEVON DEFLECTION ON N49N50 JET INTERACTION, QSIM = 20 PSF

(A)MACH = 10.33

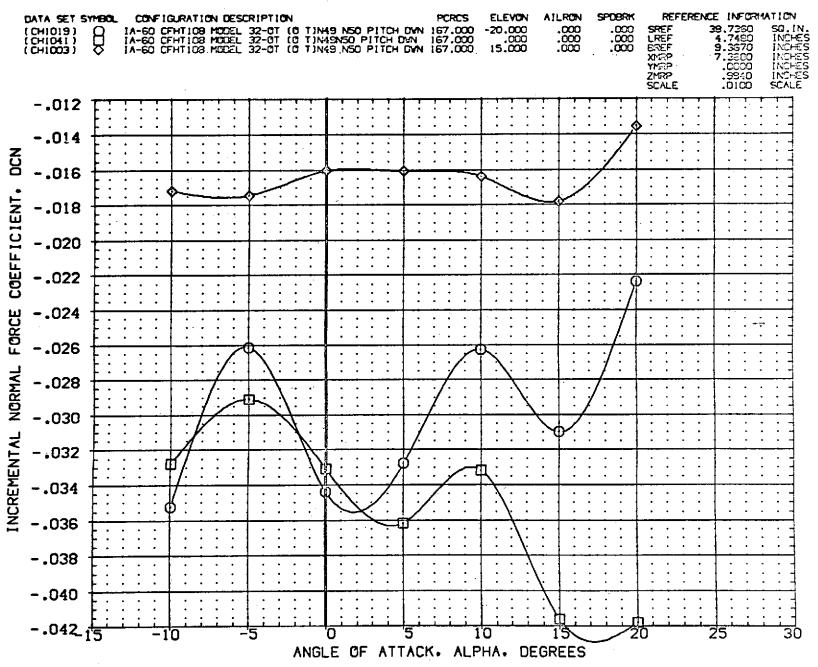


FIG 5 EFFECT OF ELEVON DEFLECTION ON N49N50 JET INTERACTION, QSIM = 20 PSF
(A)MACH = 10.33
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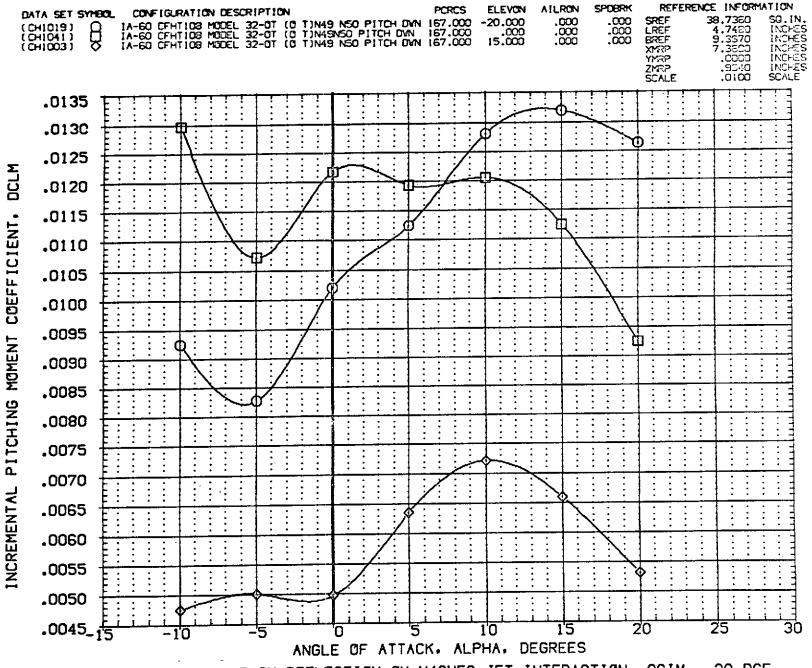


FIG 5 EFFECT OF ELEVON DEFLECTION ON N49N50 JET INTERACTION, QSIM = 20 PSF
(A)MACH = 10.33
PAGE 10

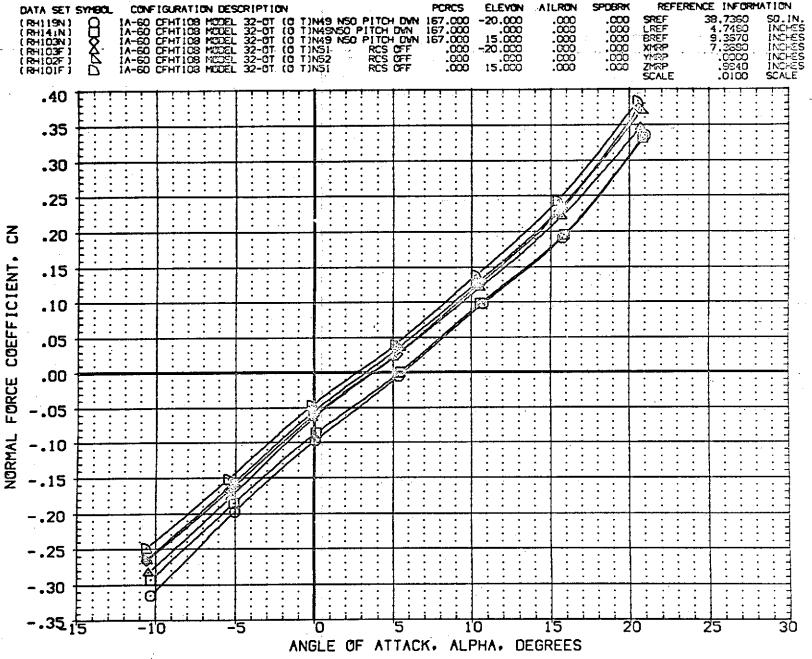


FIG 5 EFFECT OF ELEVON DEFLECTION ON N49N50 JET INTERACTION, QSIM = 20 PSF

(A)MACH = 10.33

PAGE 11

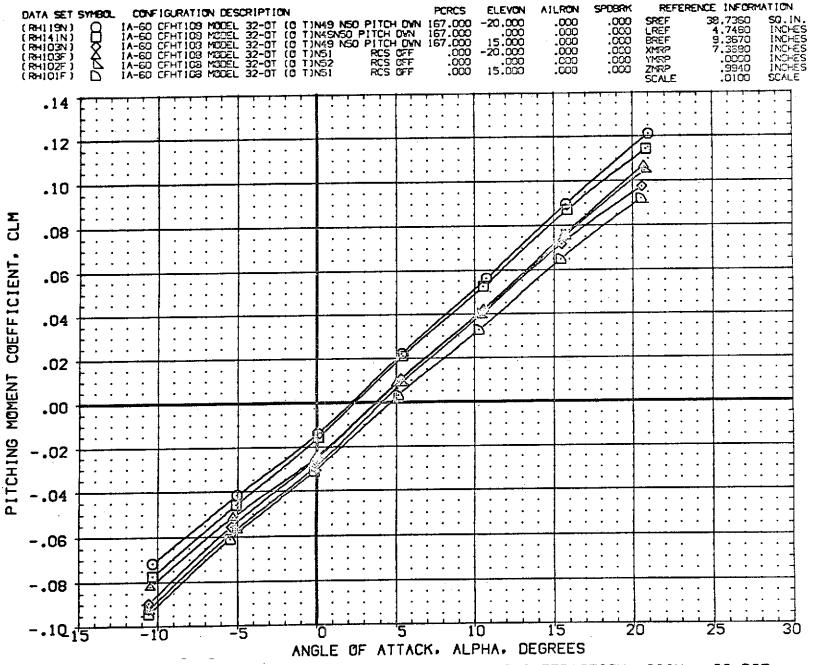
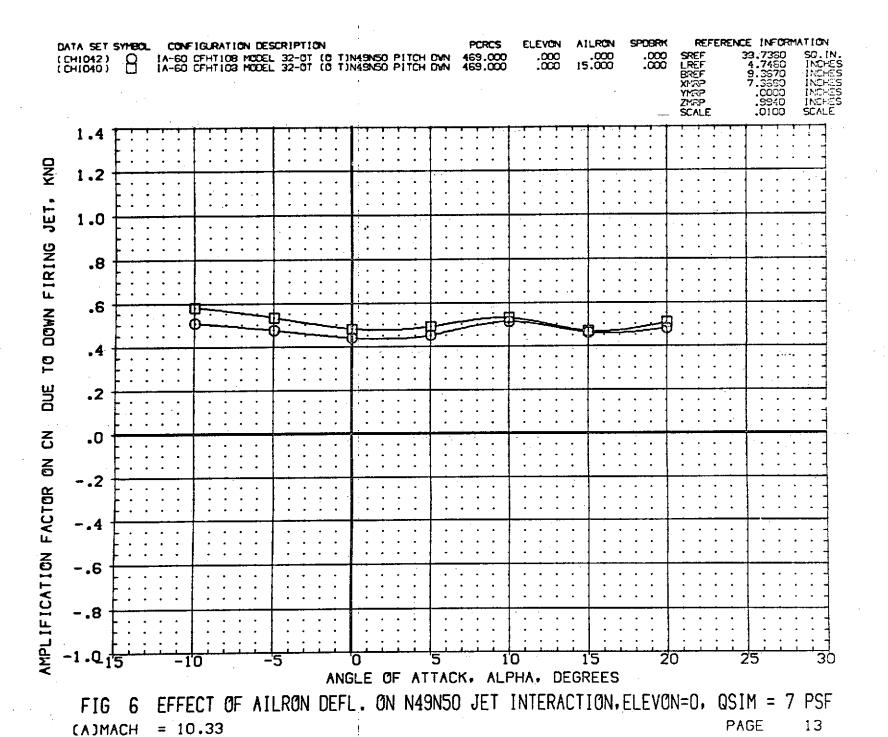


FIG 5 EFFECT OF ELEVON DEFLECTION ON N49N50 JET INTERACTION, QSIM = 20 PSF

(A)MACH = 10.33

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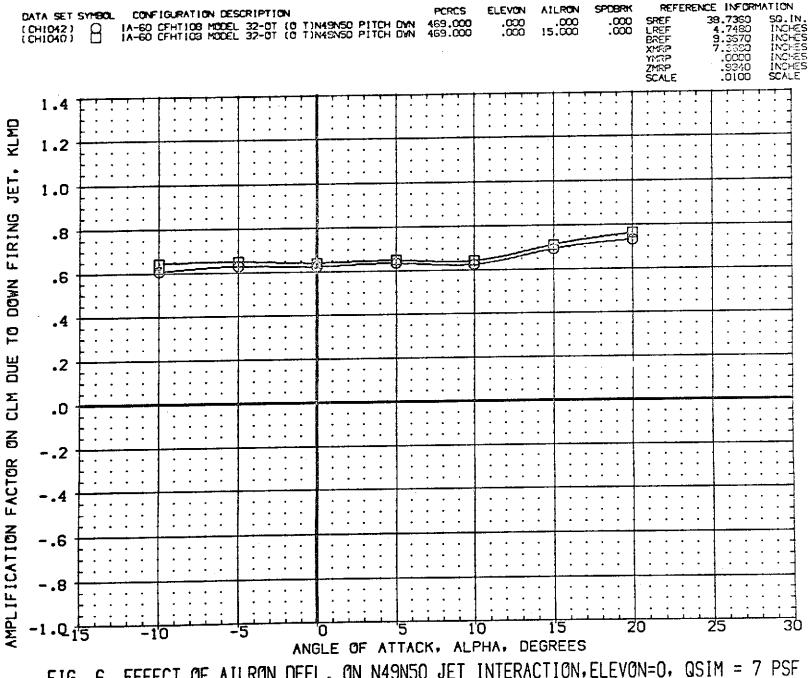
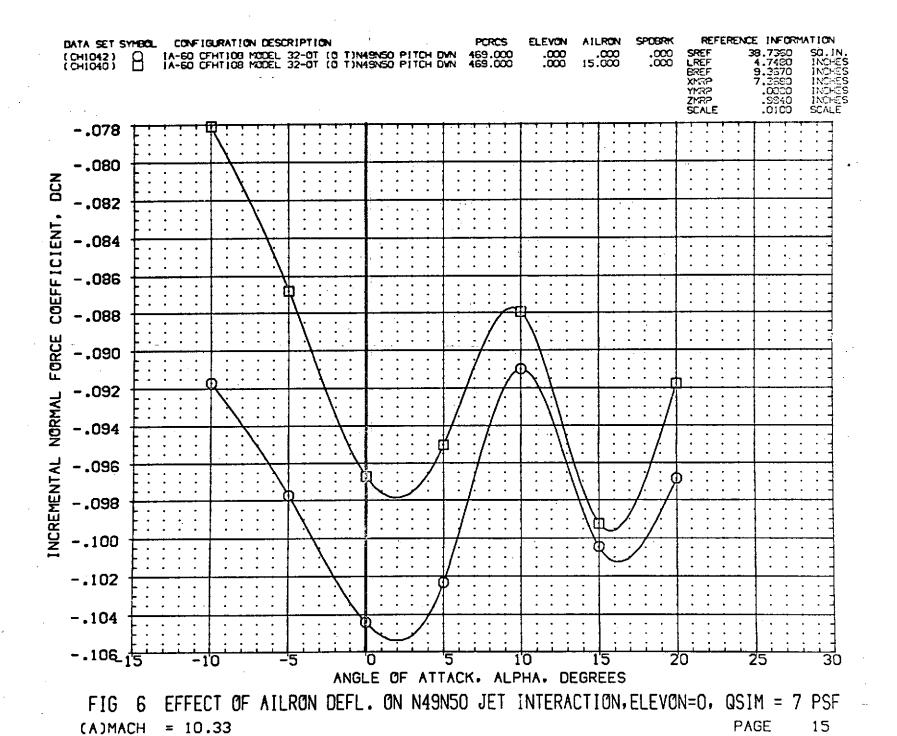


FIG 6 EFFECT OF AILRON DEFL. ON N49N50 JET INTERACTION, ELEVON=0, QSIM = 7 PSF
(A)MACH = 10.33



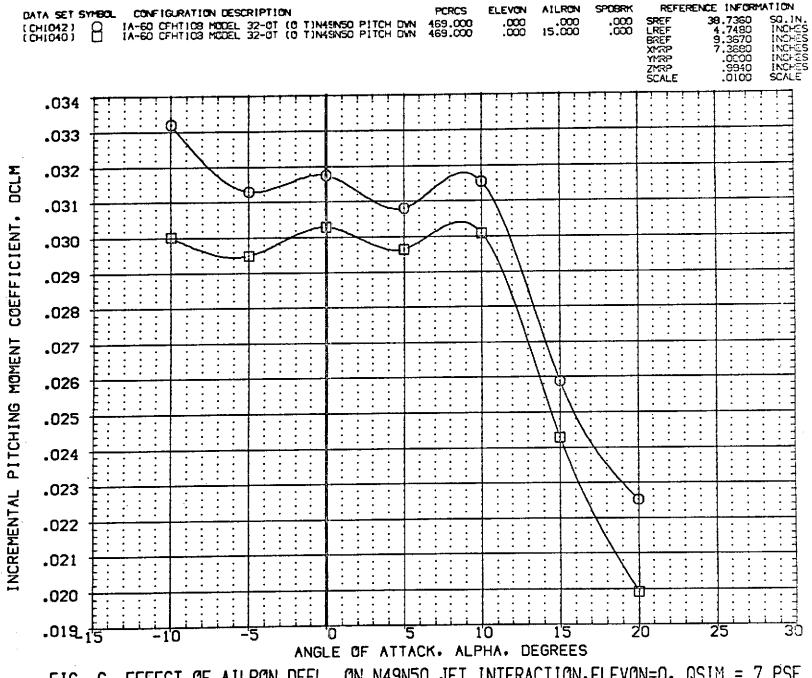


FIG 6 EFFECT OF AILRON DEFL. ON N49N50 JET INTERACTION, ELEVON=0, QSIM = 7 PSF
(A)MACH = 10.33

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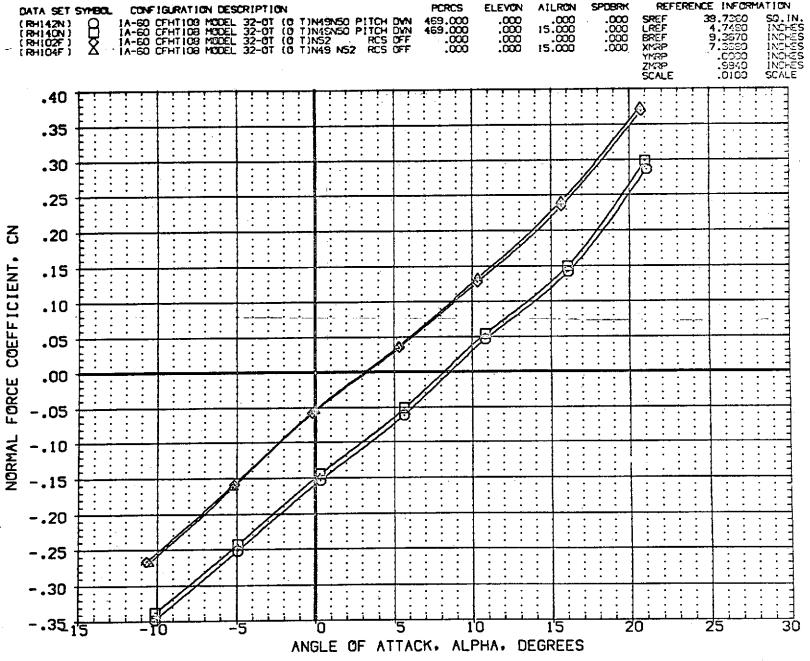


FIG 6 EFFECT OF AILRON DEFL. ON N49N50 JET INTERACTION, ELEVON=0, QSIM = 7 PSF

(A)MACH = 10.33

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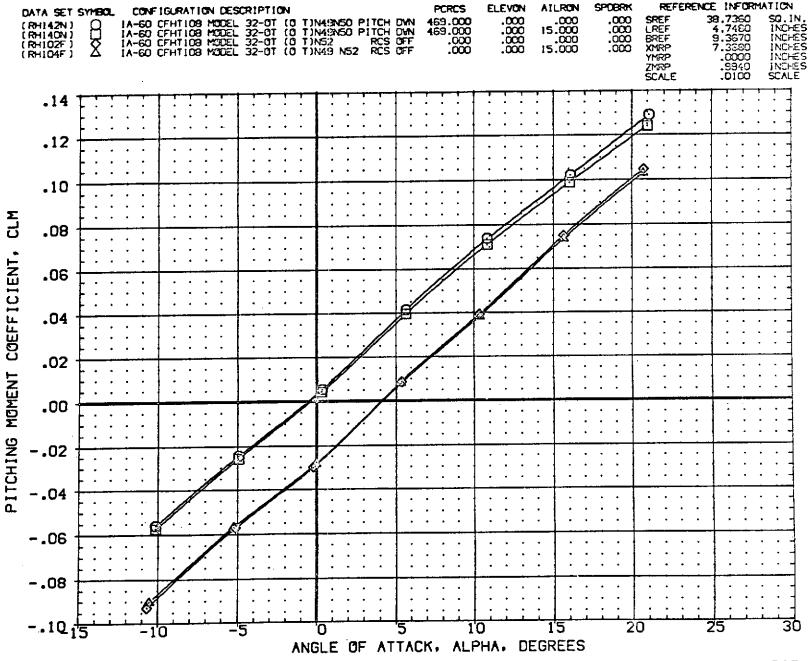


FIG 6 EFFECT OF AILRON DEFL. ON N49N50 JET INTERACTION. ELEVON=0, QSIM = 7 PSF

(A)MACH = 10.33

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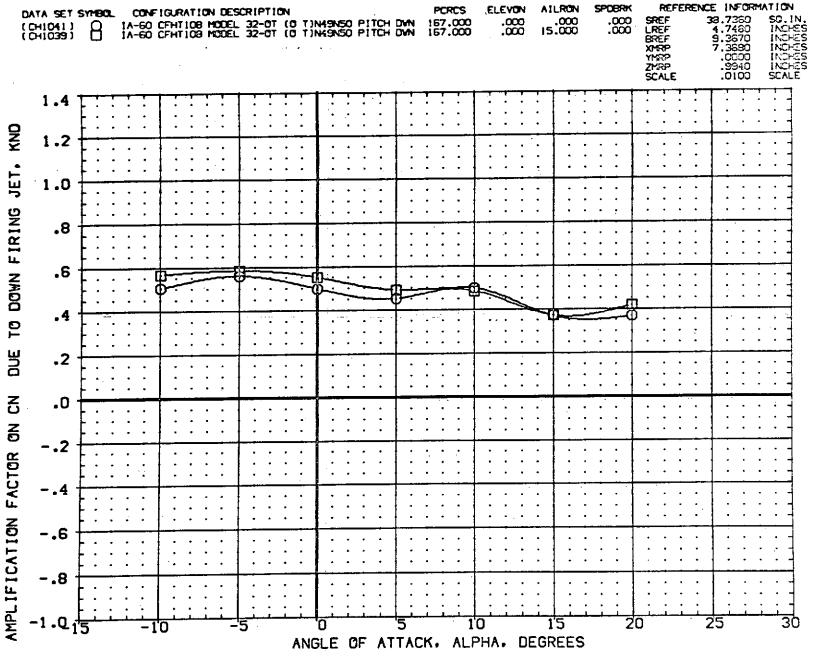
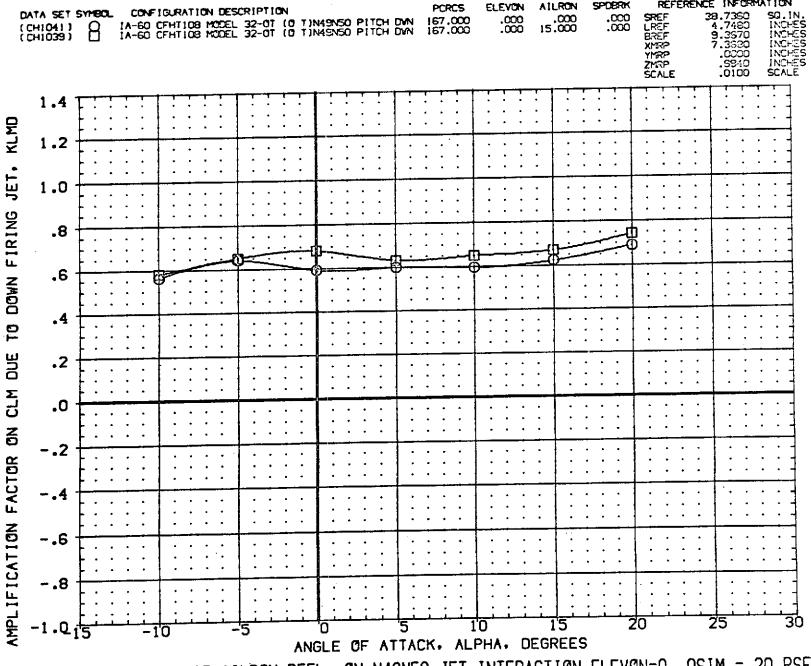


FIG 7 EFFECT OF AILRON DEFL. ON N49N50 JET INTERACTION, ELEVON=0, QSIM = 20 PSF
(A)MACH = 10.33
PAGE 19



REFERENCE INFORMATION

EFFECT OF AILRON DEFL. ON N49N50 JET INTERACTION, ELEVON=0, QSIM = 20 PSF PAGE 20 = 10.33 CADMACH

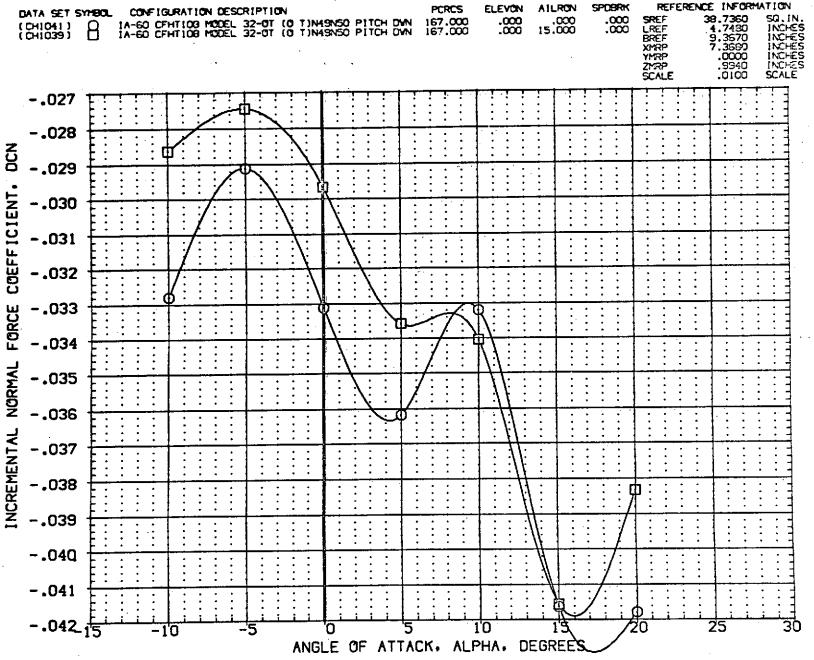


FIG 7 EFFECT OF AILRON DEFL. ON N49N50 JET INTERACTION, ELEVON=0, QSIM = 20 PSF

(A)MACH = 10.33

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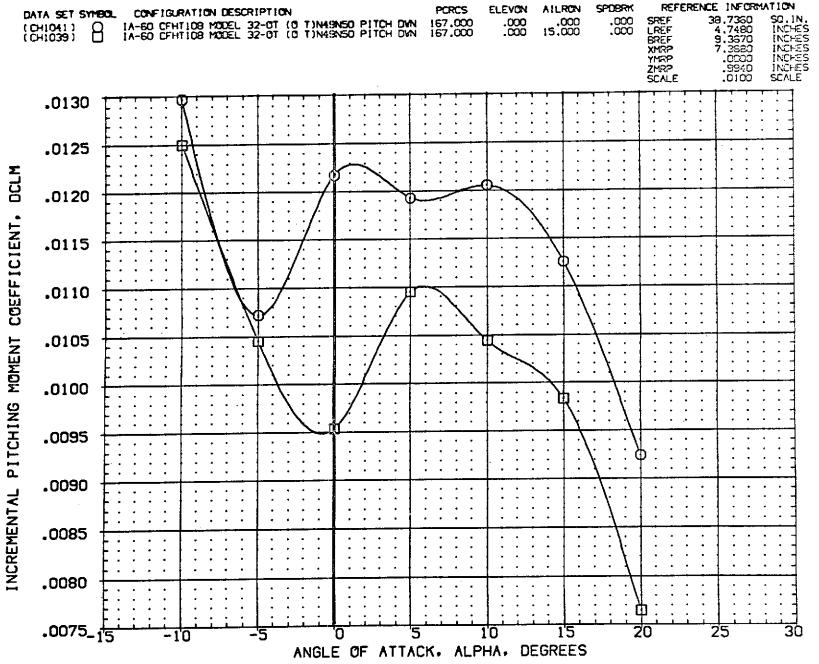


FIG 7 EFFECT OF AILRON DEFL. ON N49N50 JET INTERACTION, ELEVON=0, QSIM = 20 PSF
(A)MACH = 10.33

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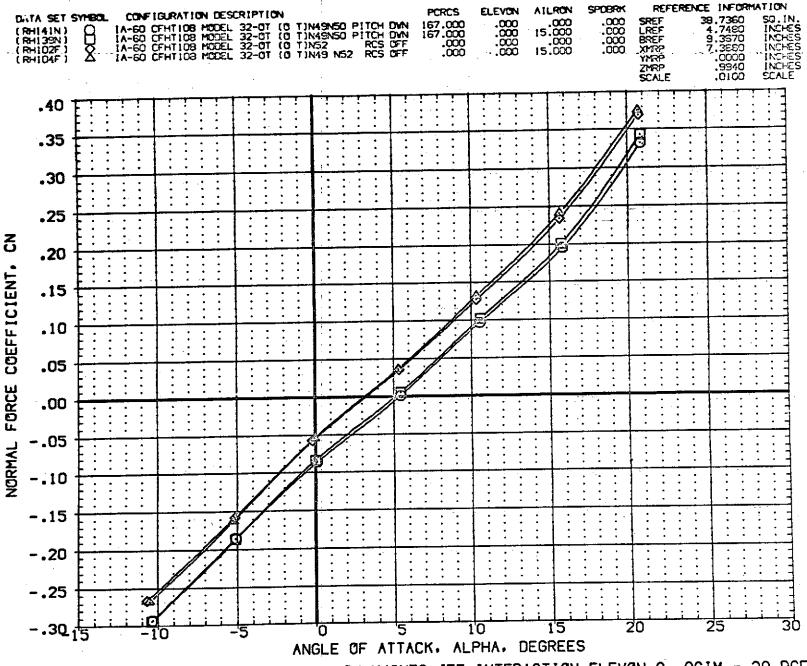


FIG 7 EFFECT OF AILRON DEFL. ON N49N50 JET INTERACTION, ELEVON=0, QSIM = 20 PSF
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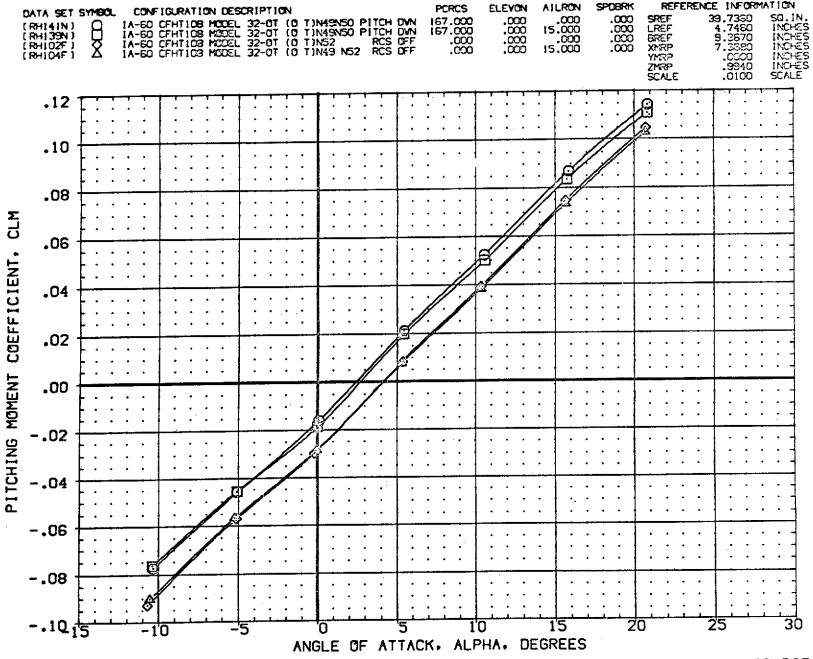
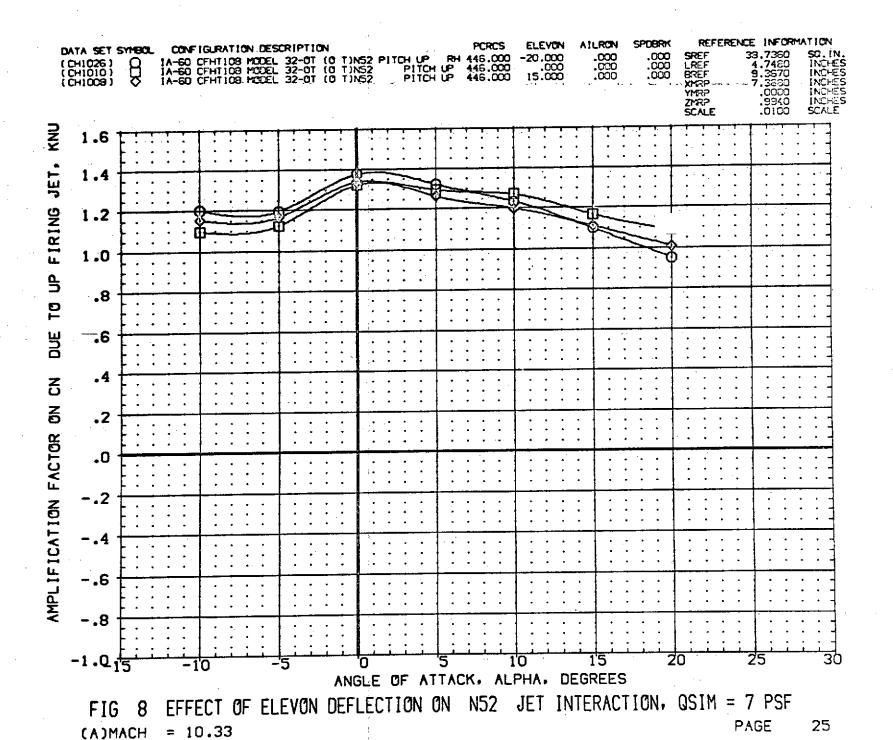


FIG 7 EFFECT OF AILRON DEFL. ON N49N50 JET INTERACTION, ELEVON=0, QSIM = 20 PSF

(A)MACH = 10.33

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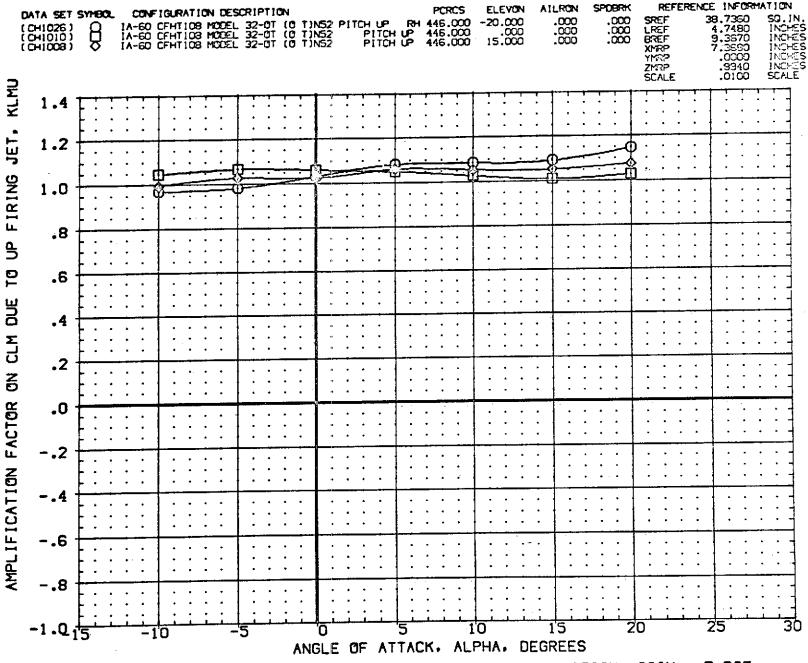
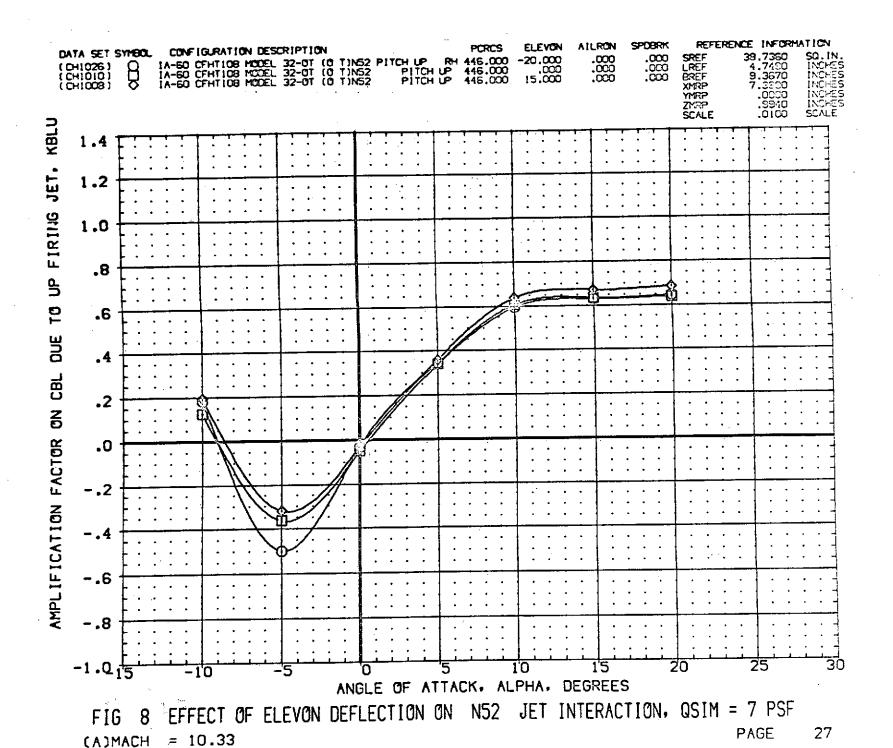


FIG 8 EFFECT OF ELEVON DEFLECTION ON N52 JET INTERACTION, QSIM = 7 PSF

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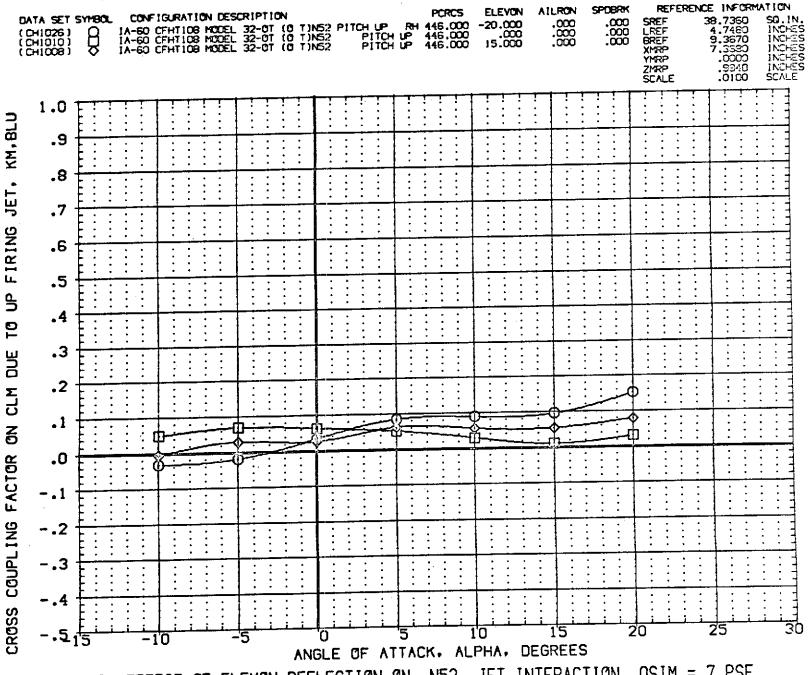
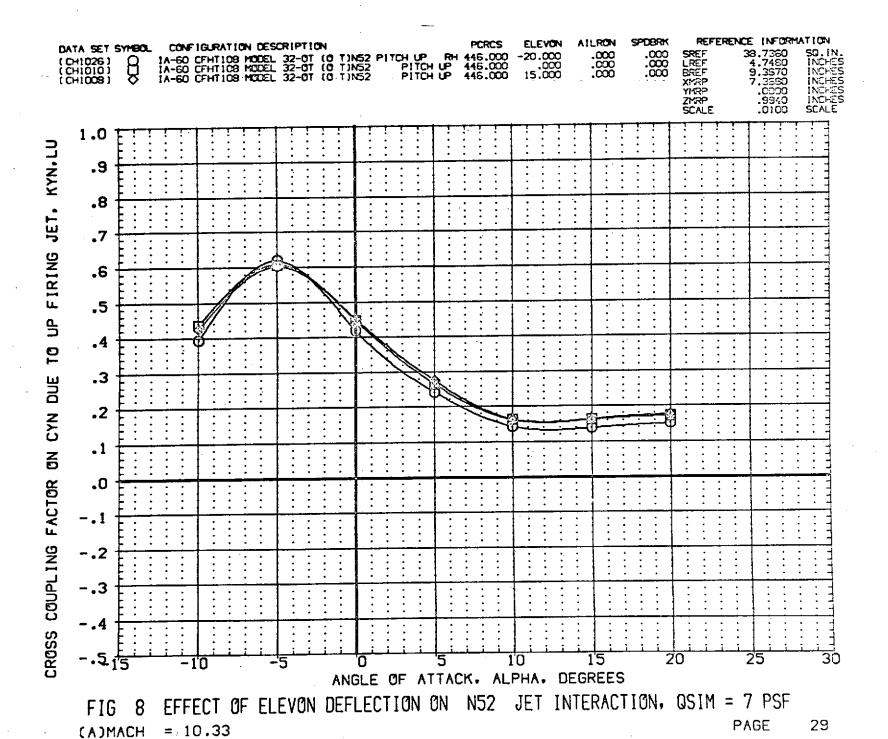


FIG 8 EFFECT OF ELEVON DEFLECTION ON N52 JET INTERACTION, QSIM = 7 PSF

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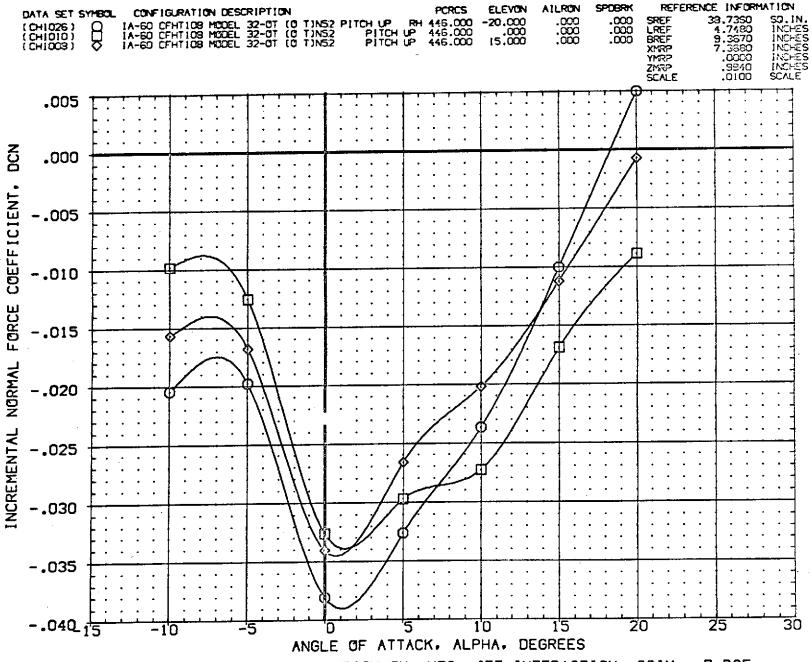
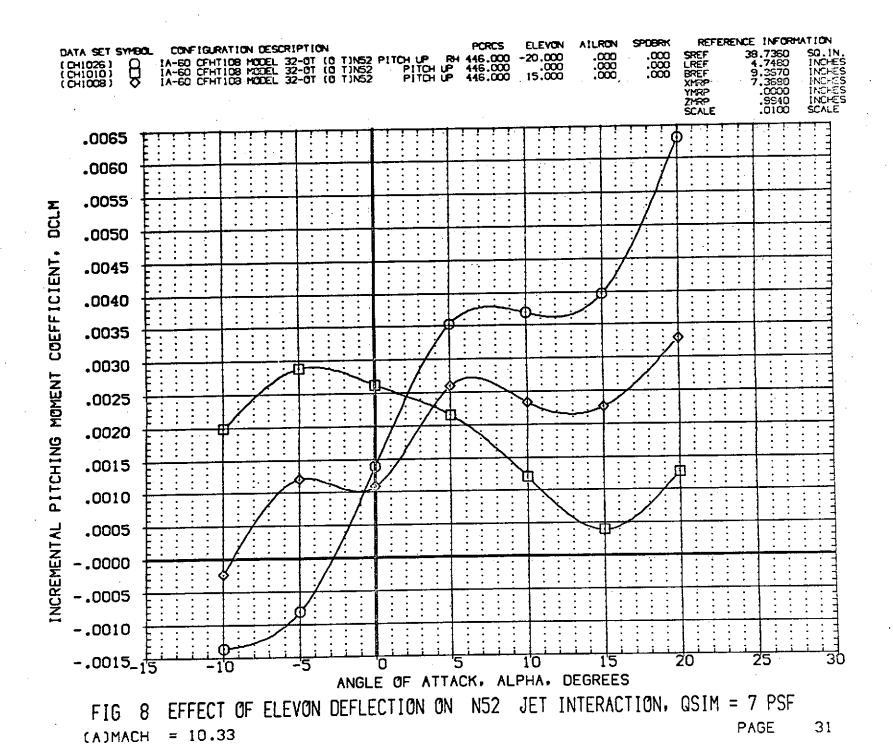


FIG 8 EFFECT OF ELEVON DEFLECTION ON N52 JET INTERACTION, QSIM = 7 PSF

(A)MACH = 10.33

PAGE 30



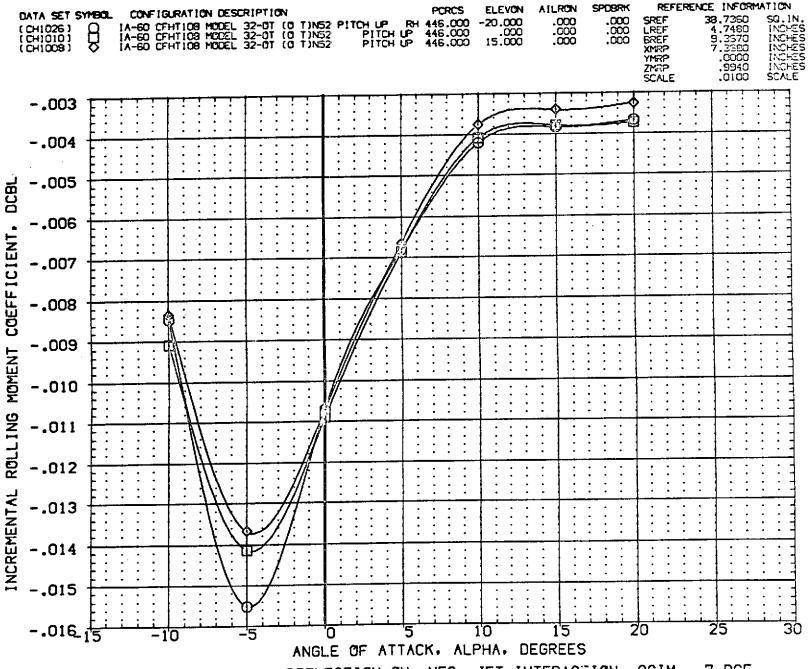


FIG 8 EFFECT OF ELEVON DEFLECTION ON N52 JET INTERACTION, QSIM = 7 PSF

(A)MACH = 10.33

PAGE 32

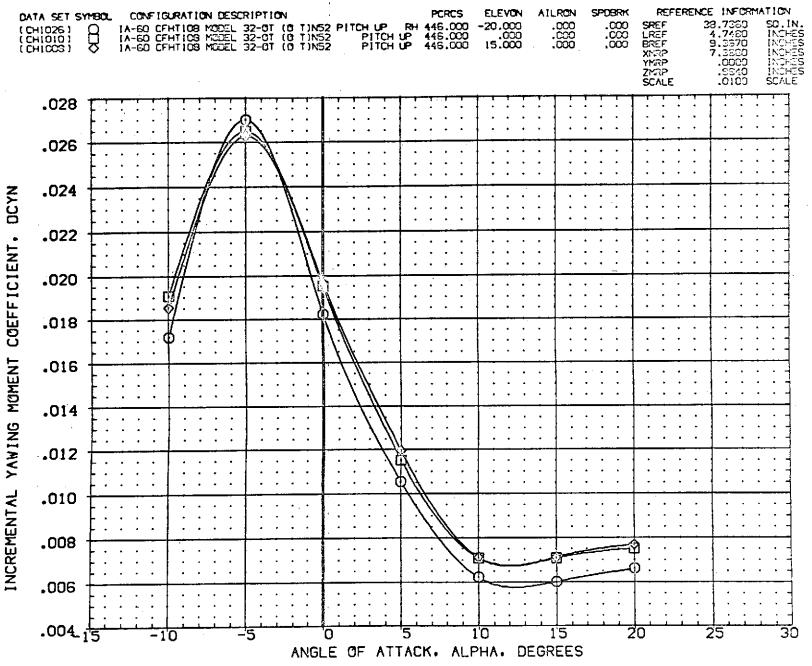


FIG 8 EFFECT OF ELEVON DEFLECTION ON N52 JET INTERACTION, QSIM = 7 PSF
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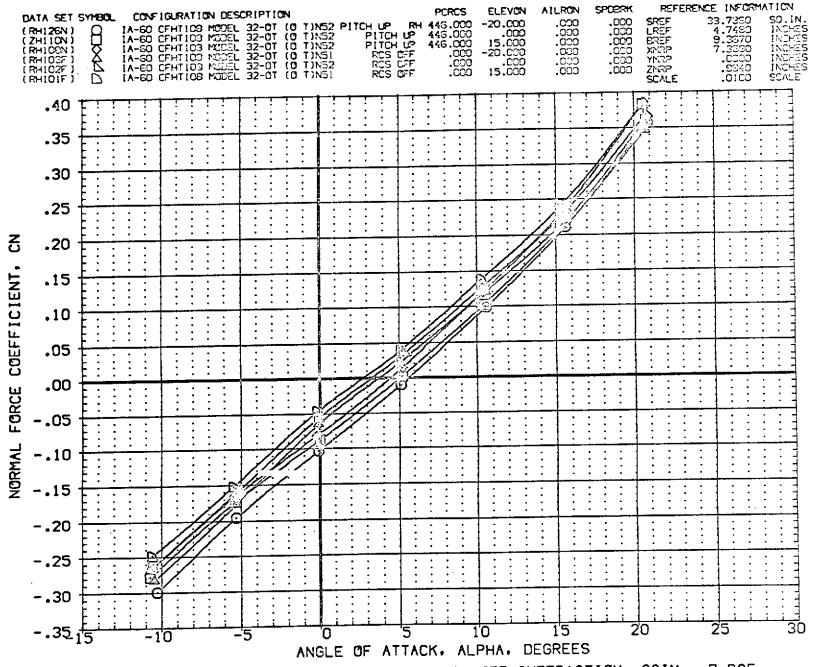


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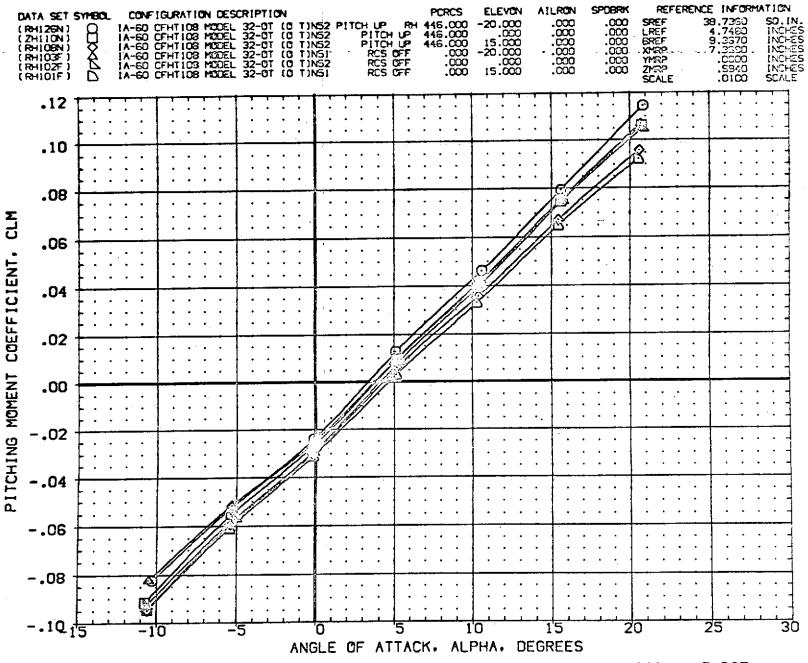


FIG 8 EFFECT OF ELEVON DEFLECTION ON N52 JET INTERACTION, QSIM = 7 PSF
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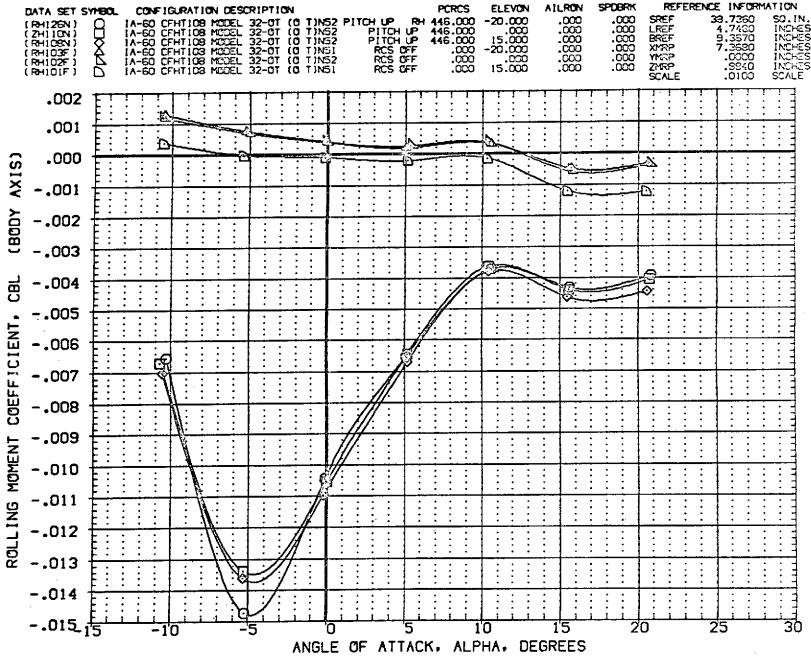


FIG 8 EFFECT OF ELEVON DEFLECTION ON N52 JET INTERACTION, QSIM = 7 PSF

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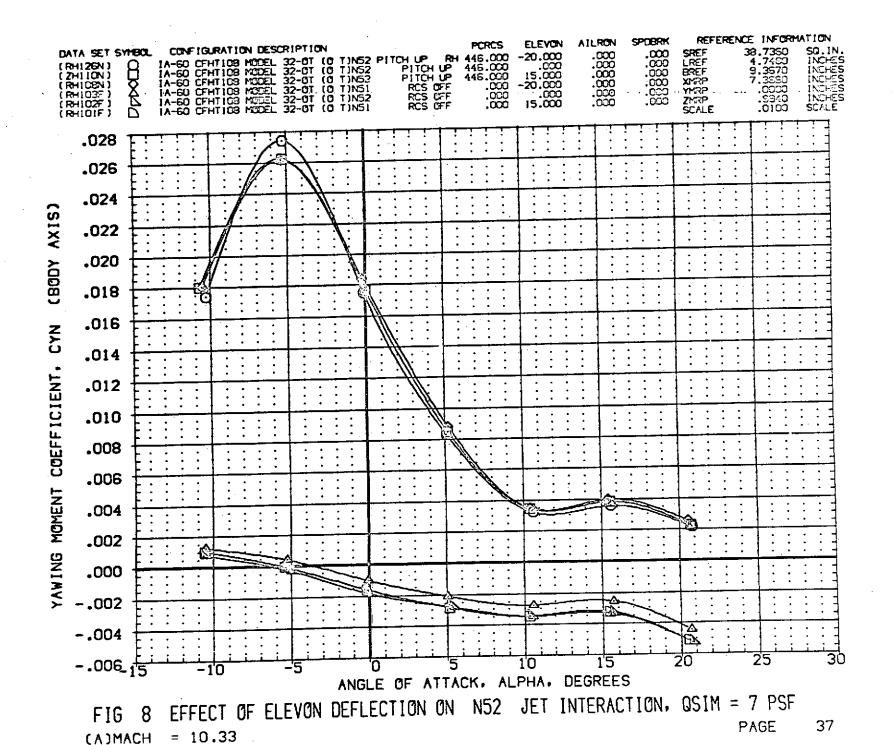




FIG 9 EFFECT OF ELEVON DEFLECTION ON N52 JET INTERACTION, QSIM = 20 PSF

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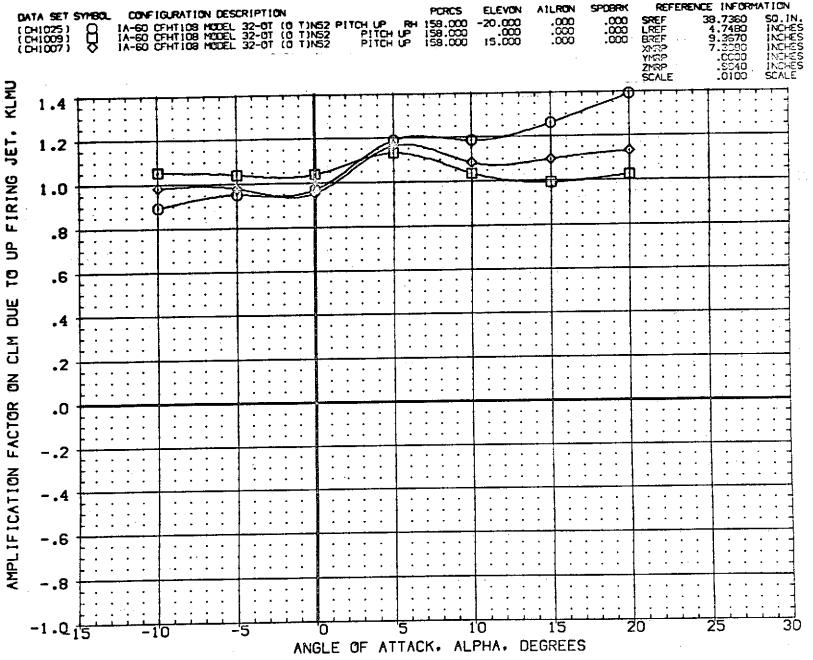


FIG 9 EFFECT OF ELEVON DEFLECTION ON N52 JET INTERACTION, QSIM = 20 PSF
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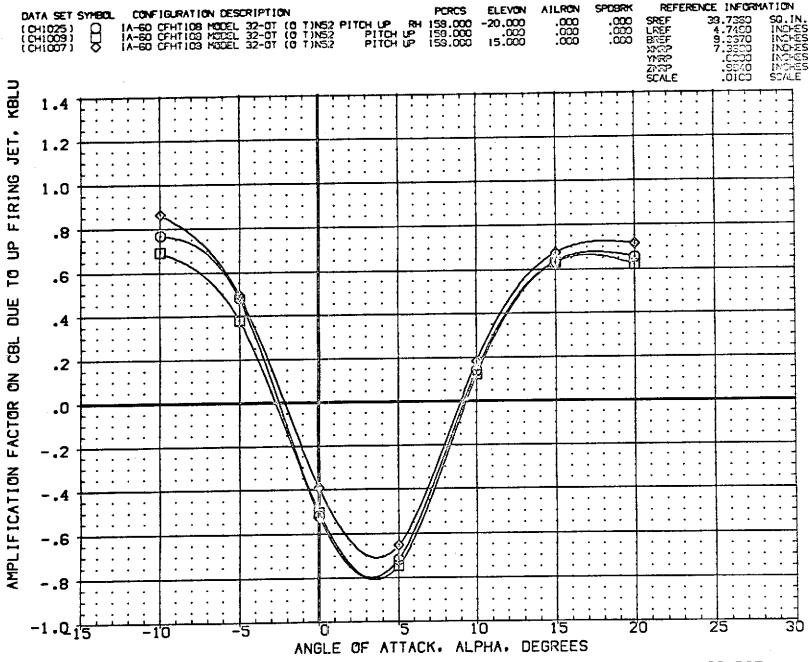
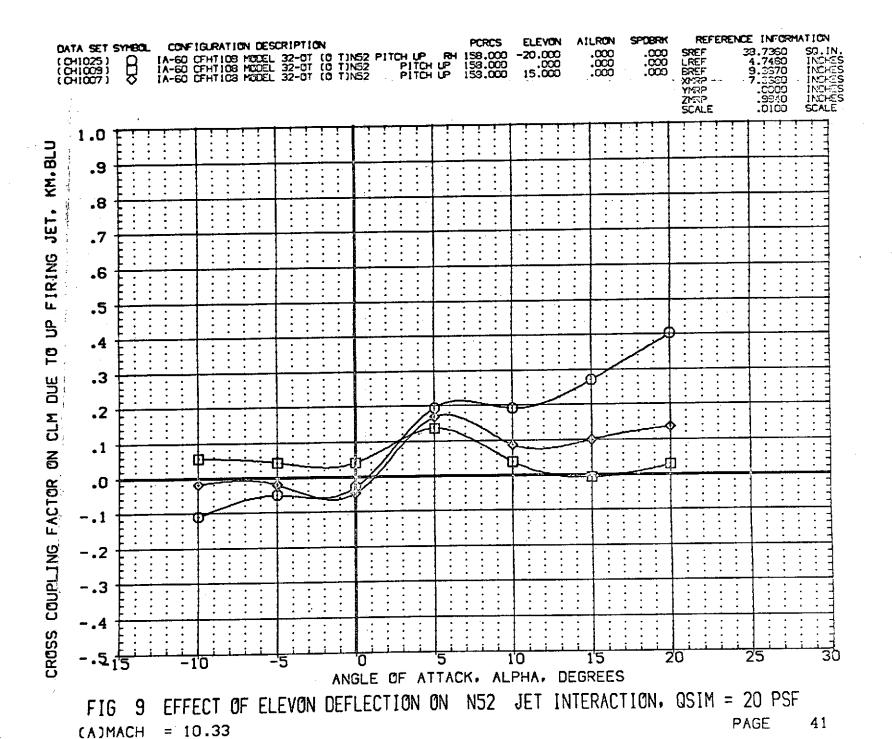


FIG 9 EFFECT OF ELEVON DEFLECTION ON N52 JET INTERACTION, QSIM = 20 PSF

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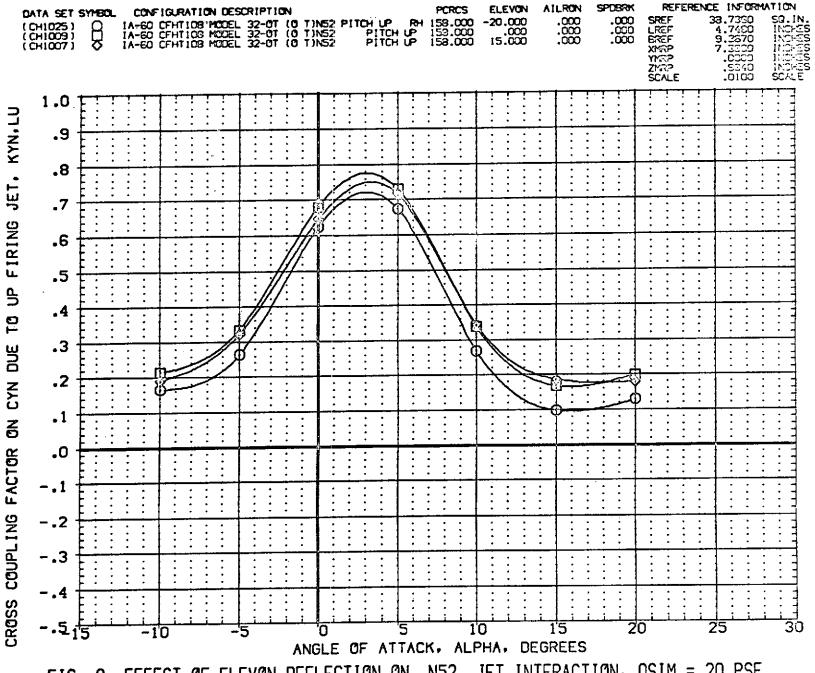
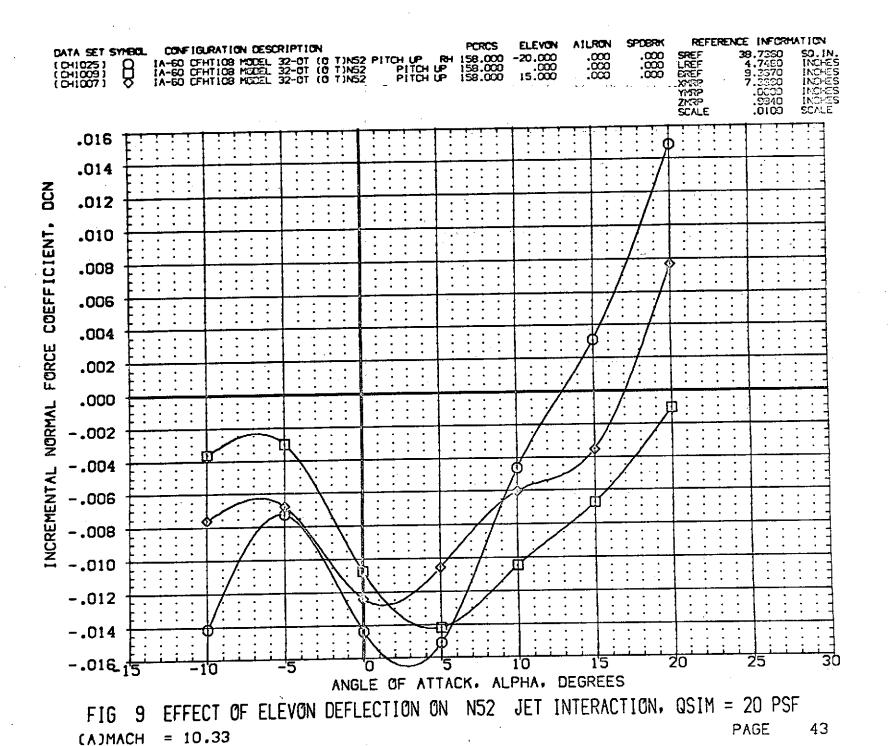
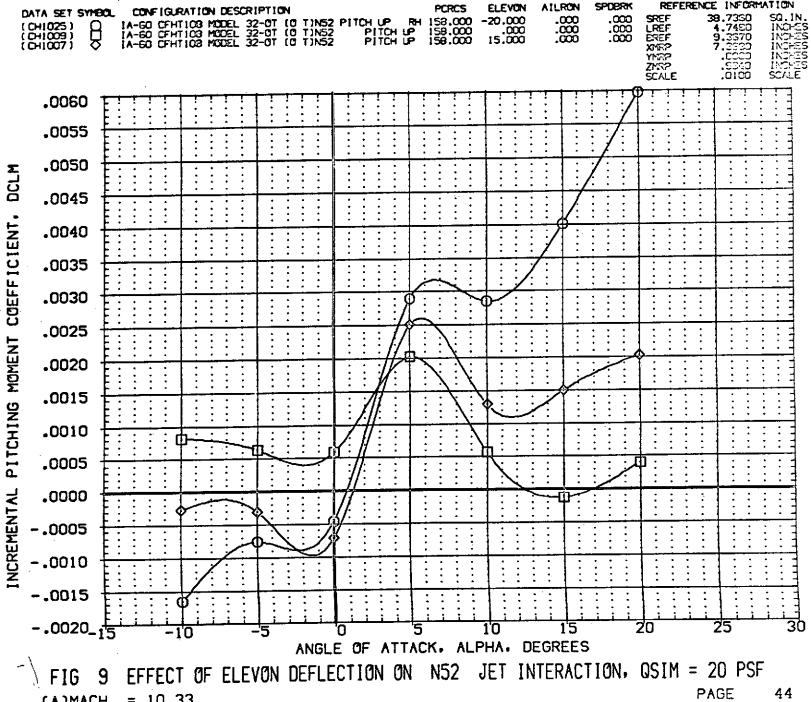


FIG 9 EFFECT OF ELEVON DEFLECTION ON N52 JET INTERACTION, QSIM = 20 PSF

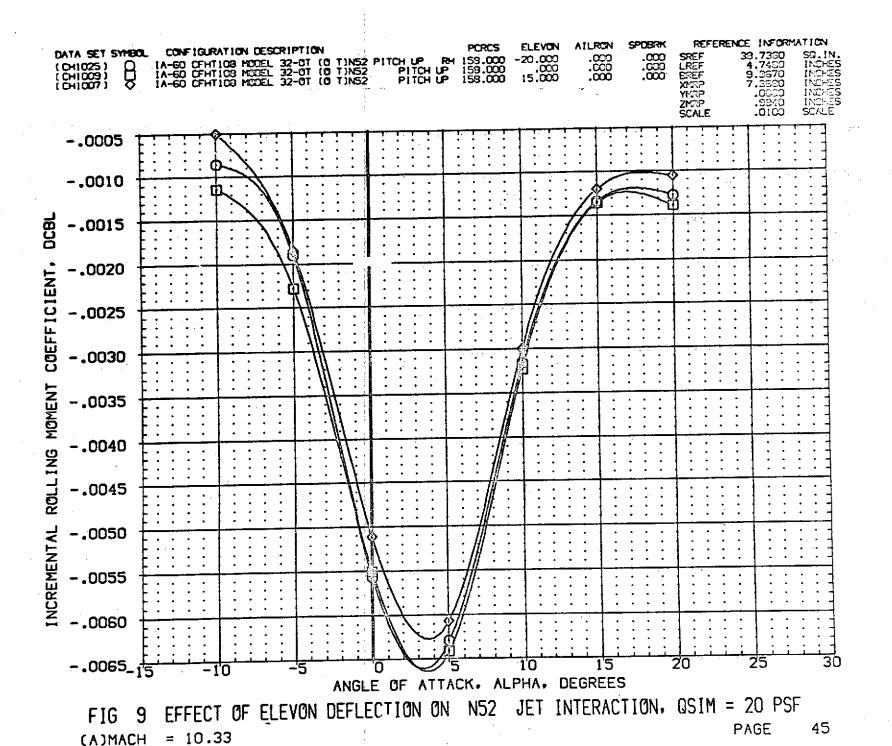
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PAGE 42





(A)MACH = 10.33



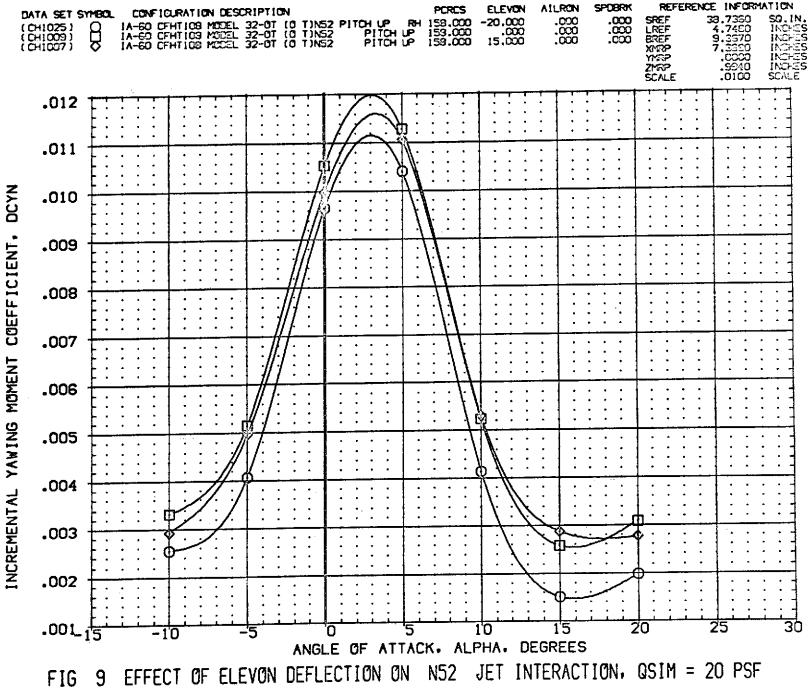


FIG 9 EFFECT OF ELEVON DEFLECTION ON N52 JET INTERACTION, USIM = 20 PSF

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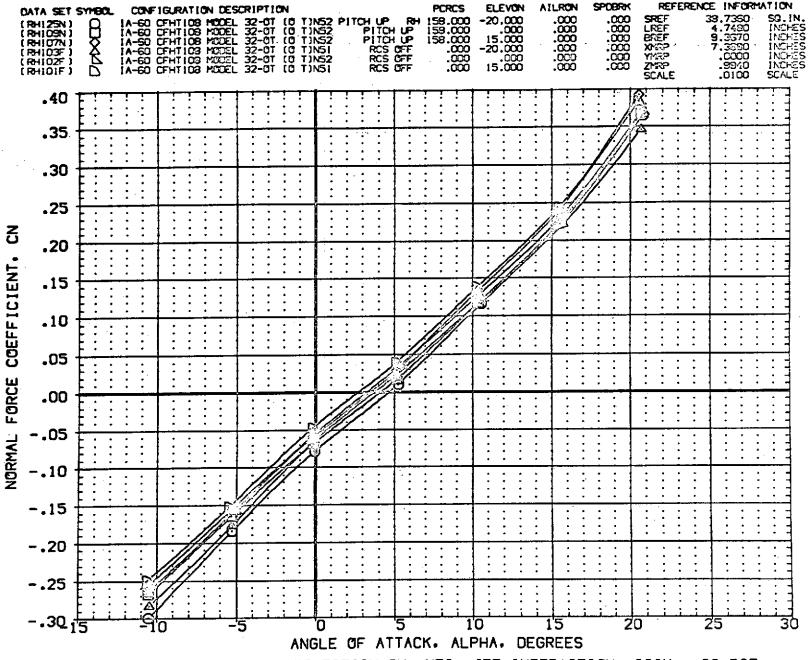


FIG 9 EFFECT OF ELEVON DEFLECTION ON N52 JET INTERACTION, QSIM = 20 PSF
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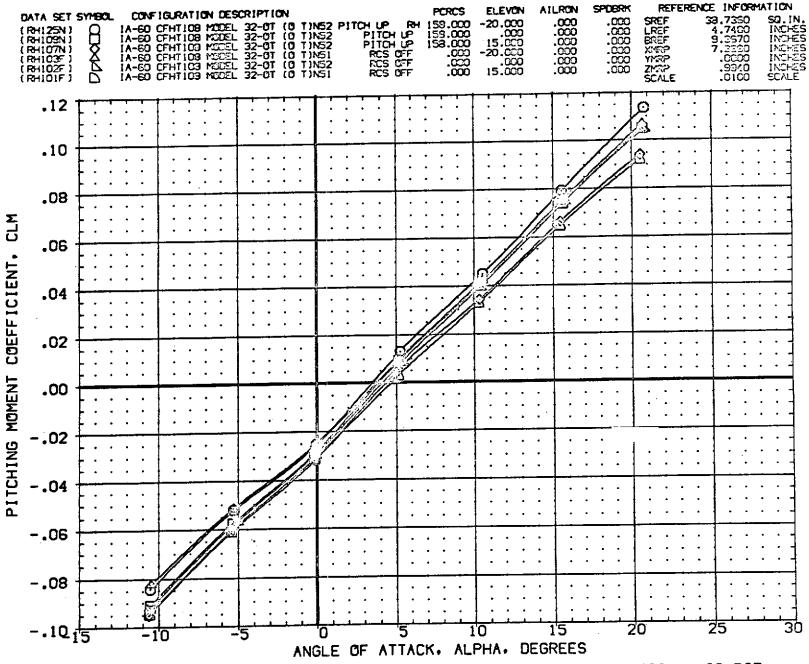


FIG 9 EFFECT OF ELEVON DEFLECTION ON N52 JET INTERACTION, QSIM = 20 PSF

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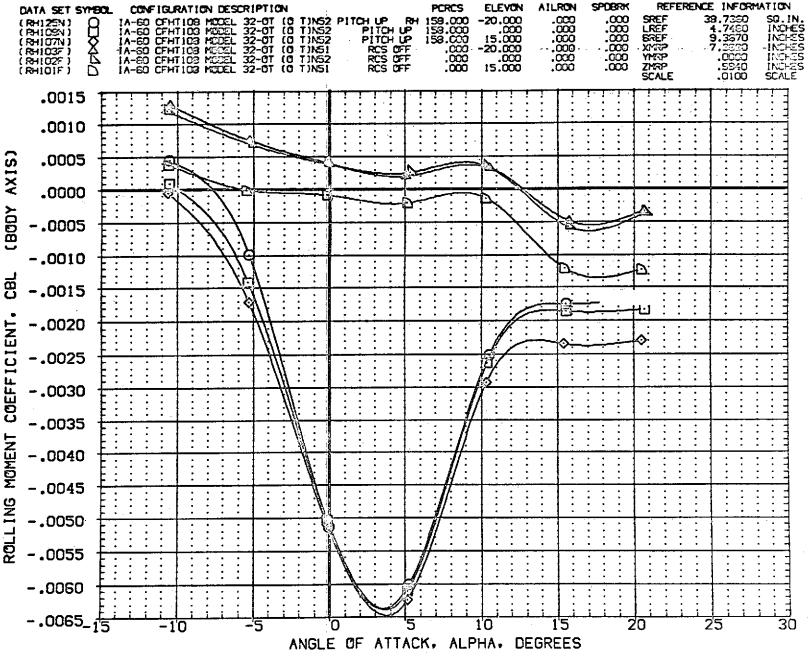


FIG 9 EFFECT OF ELEVON DEFLECTION ON N52 JET INTERACTION, QSIM = 20 PSF
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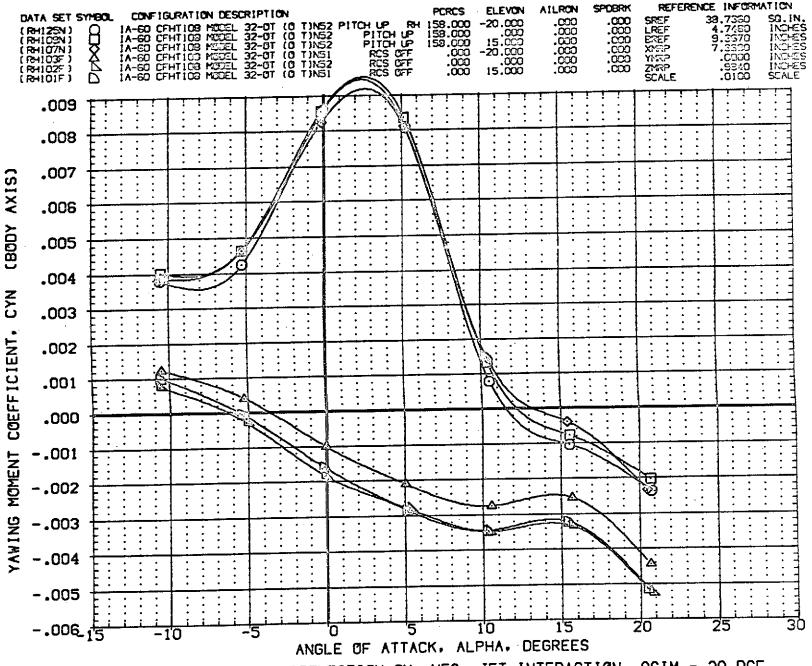
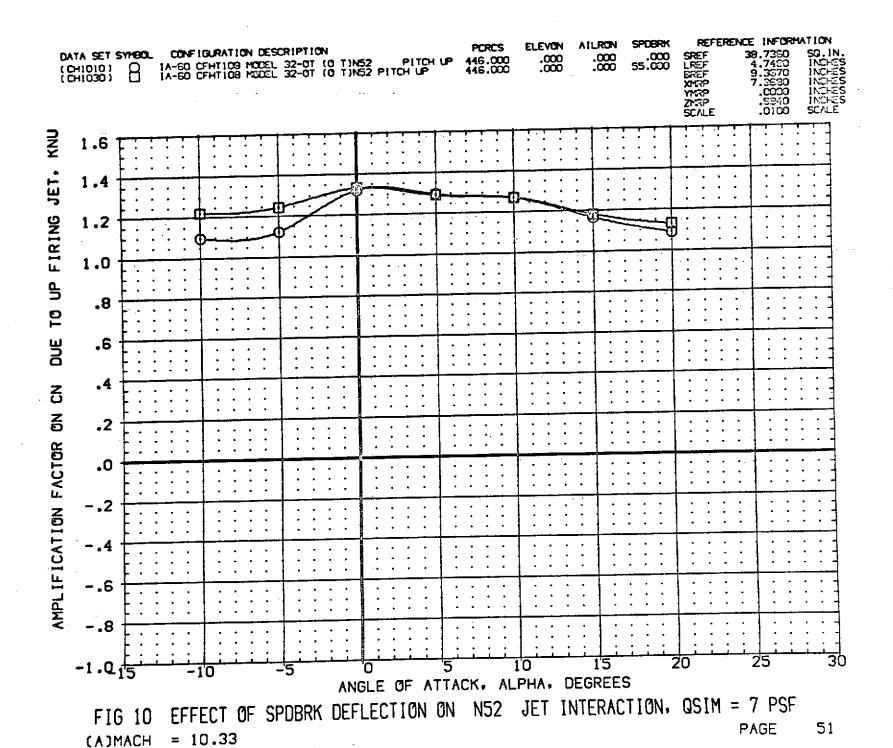


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(A)MACH = 10.33



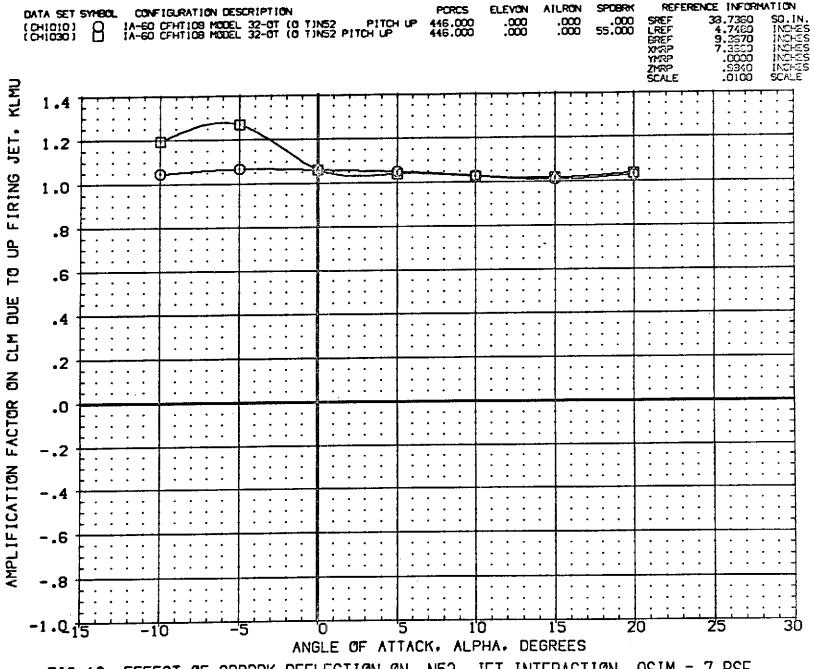
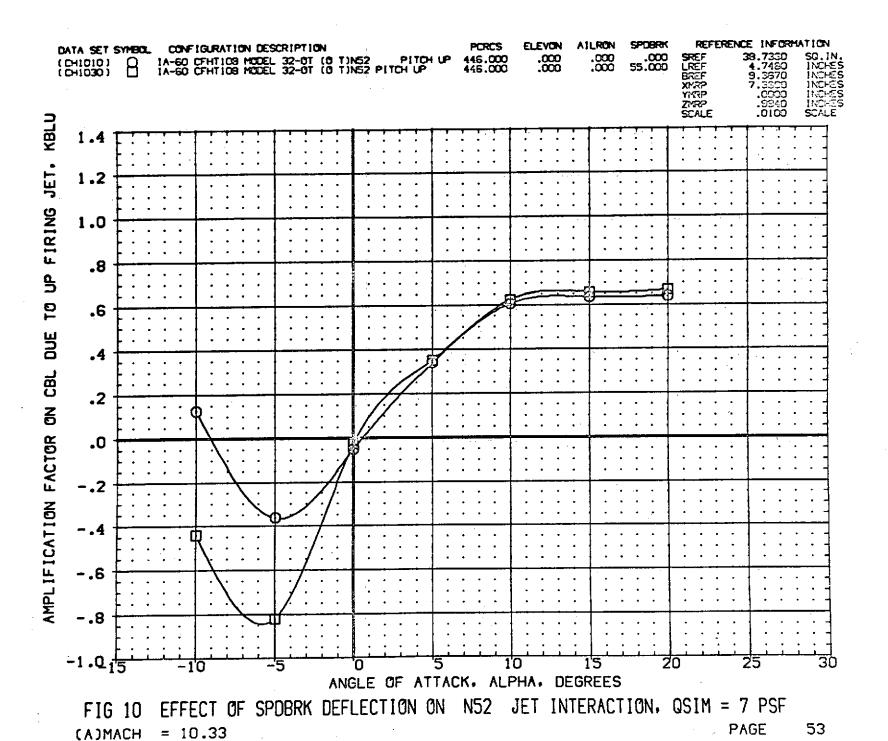


FIG 10 EFFECT OF SPDBRK DEFLECTION ON N52 JET INTERACTION, QSIM = 7 PSF

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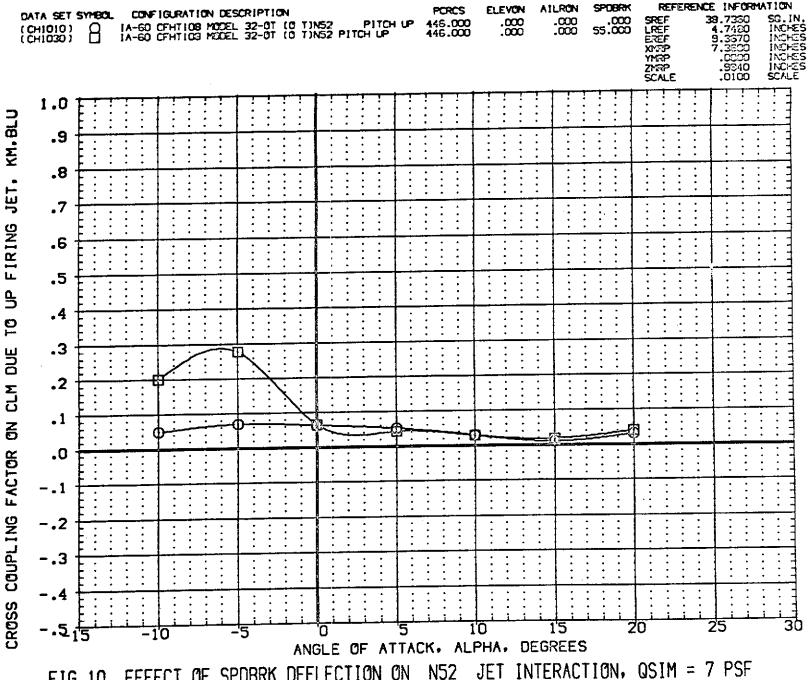
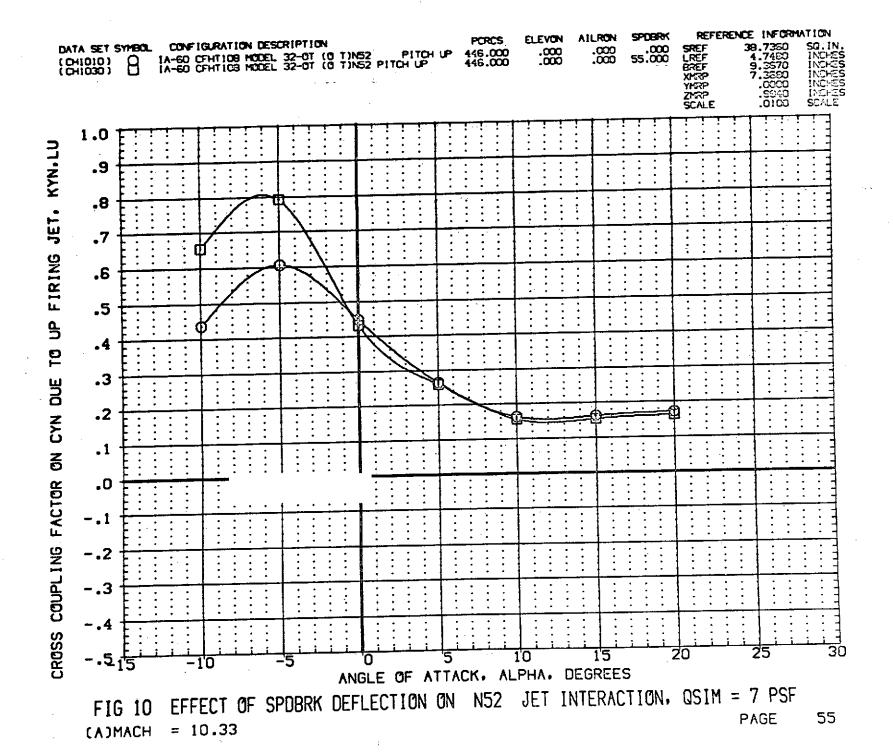


FIG 10 EFFECT OF SPDBRK DEFLECTION ON N52 JET INTERACTION, QSIM = 7 PSF

(A)MACH = 10.33



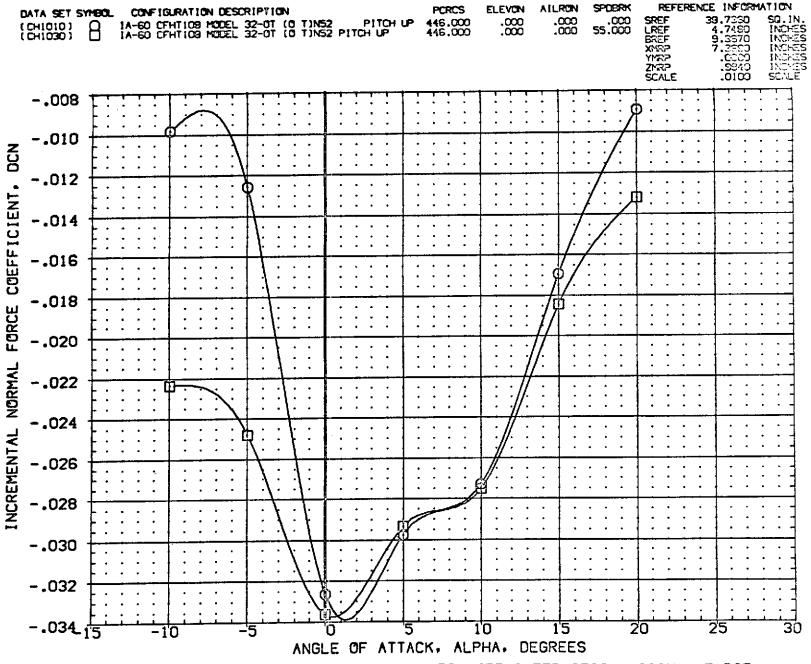
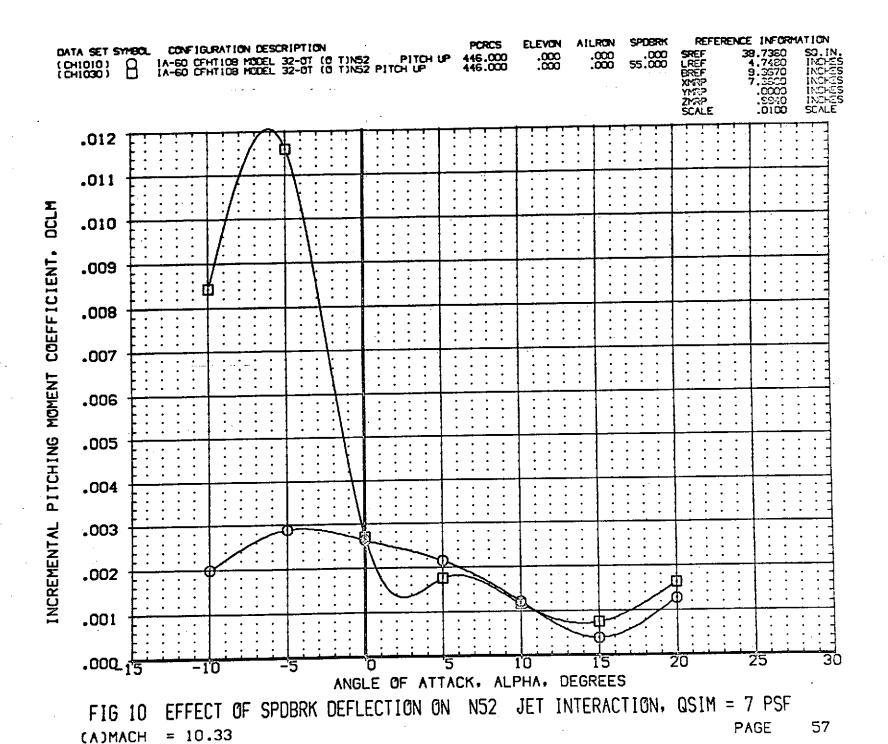


FIG 10 EFFECT OF SPDBRK DEFLECTION ON N52 JET INTERACTION, QSIM = 7 PSF

(A)MACH = 10.33

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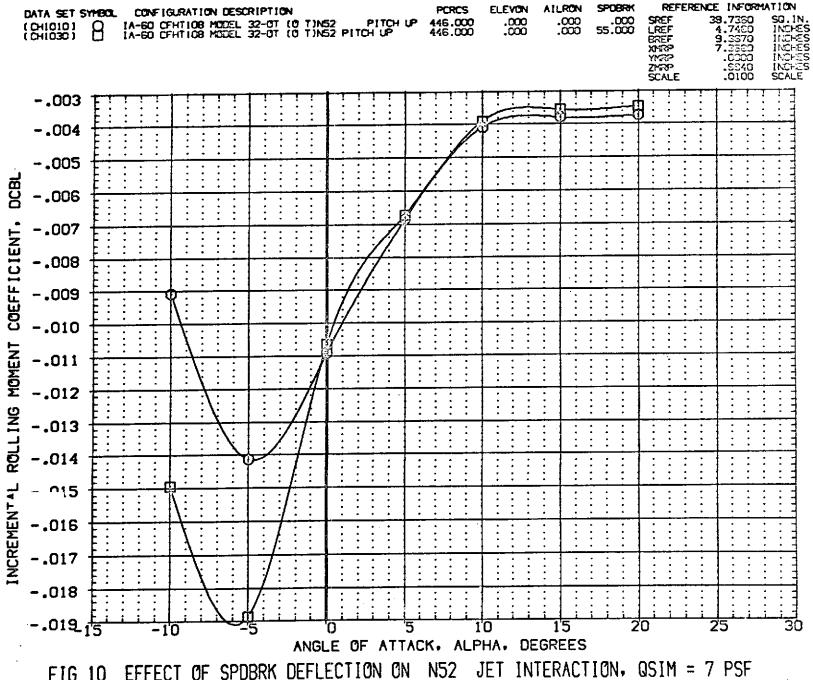
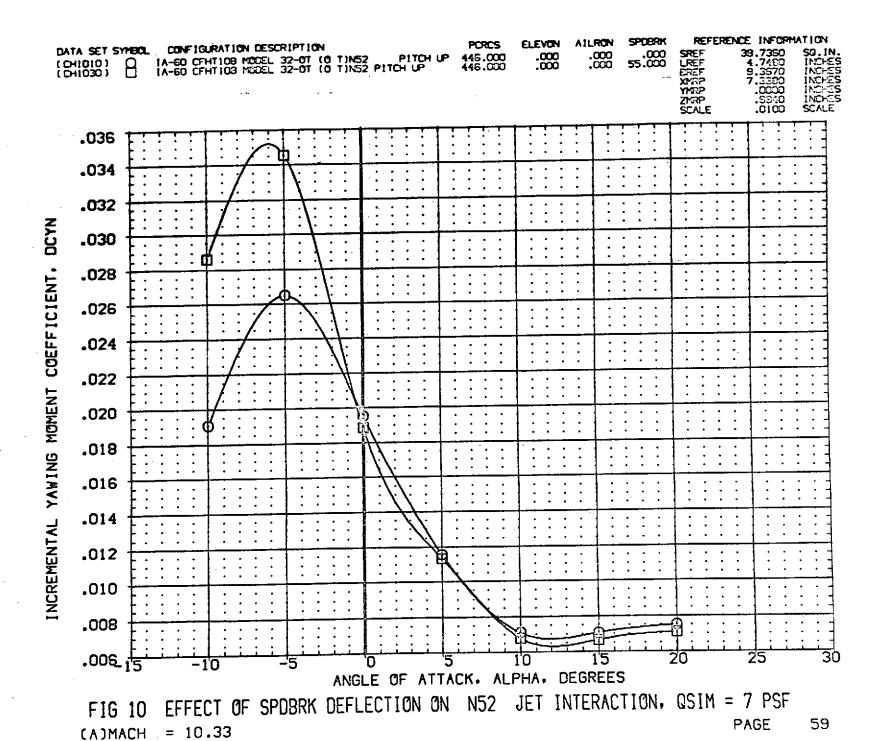


FIG 10 EFFECT OF SPDBRK DEFLECTION ON N52 JET INTERACTION, QSIM = 7 PSF

(A)MACH = 10.33



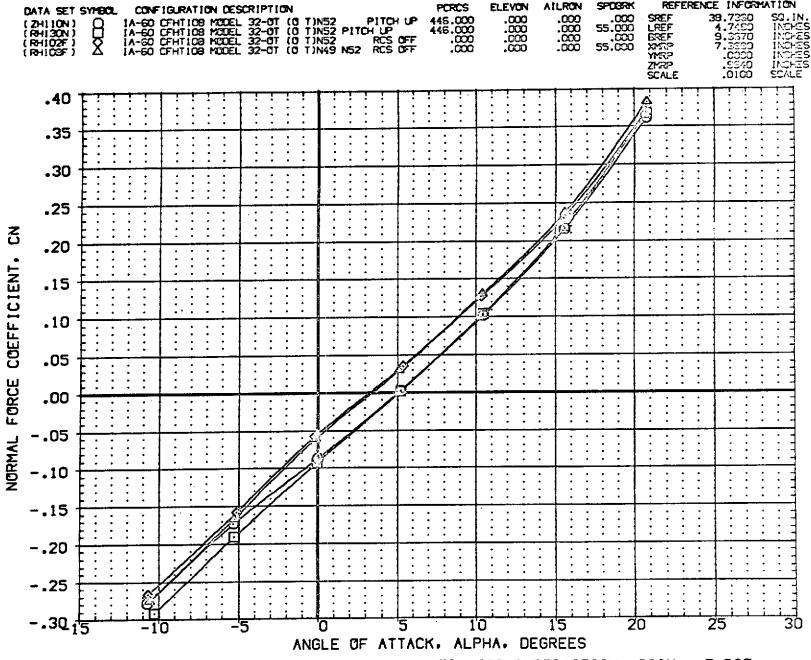


FIG 10 EFFECT OF SPDBRK DEFLECTION ON N52 JET INTERACTION, QSIM = 7 PSF

(A)MACH = 10.33

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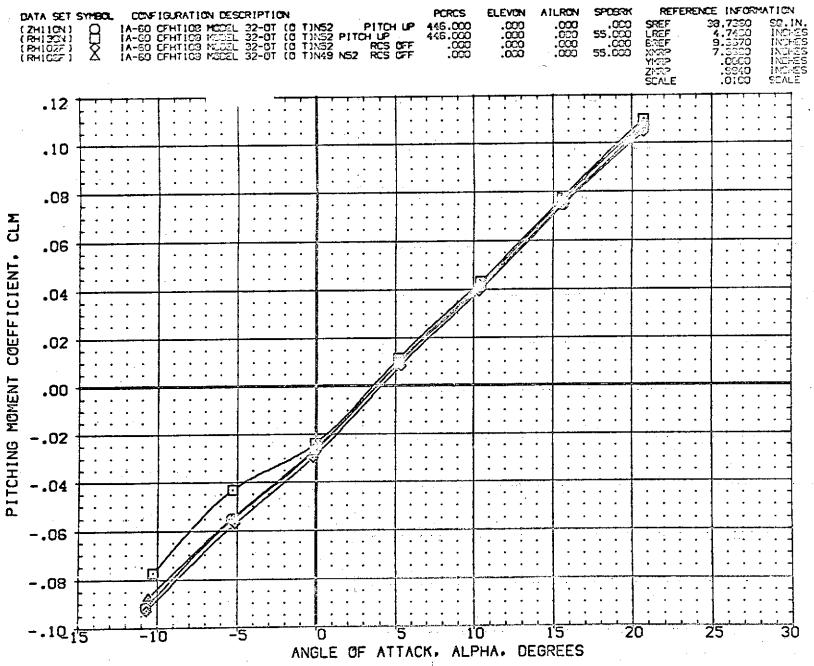


FIG 10 EFFECT OF SPDBRK DEFLECTION ON N52 JET INTERACTION, QSIM = 7 PSF

(A)MACH = 10.33

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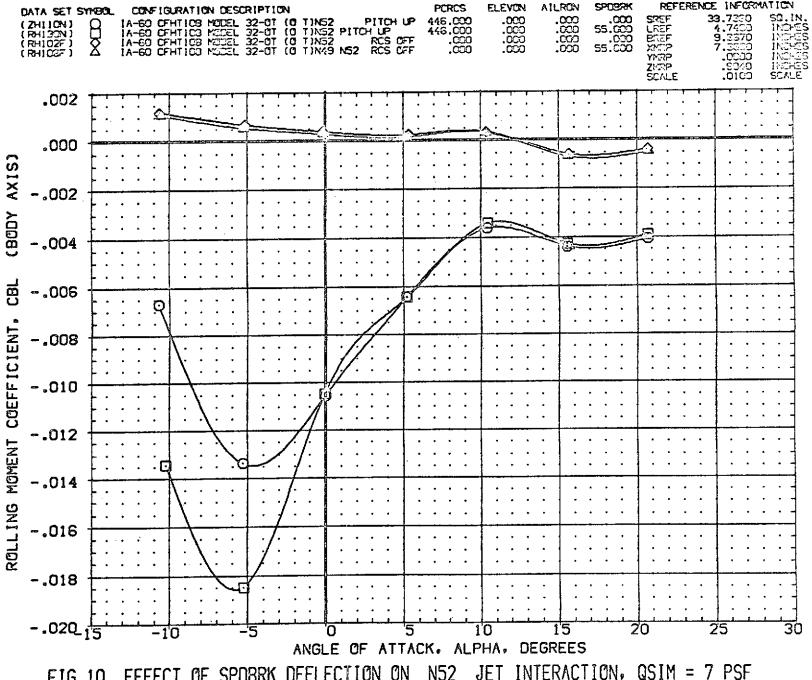


FIG 10 EFFECT OF SPDBRK DEFLECTION ON N52 JET INTERACTION, QSIM = 7 PSF

(A)MACH = 10.33

PAGE 62

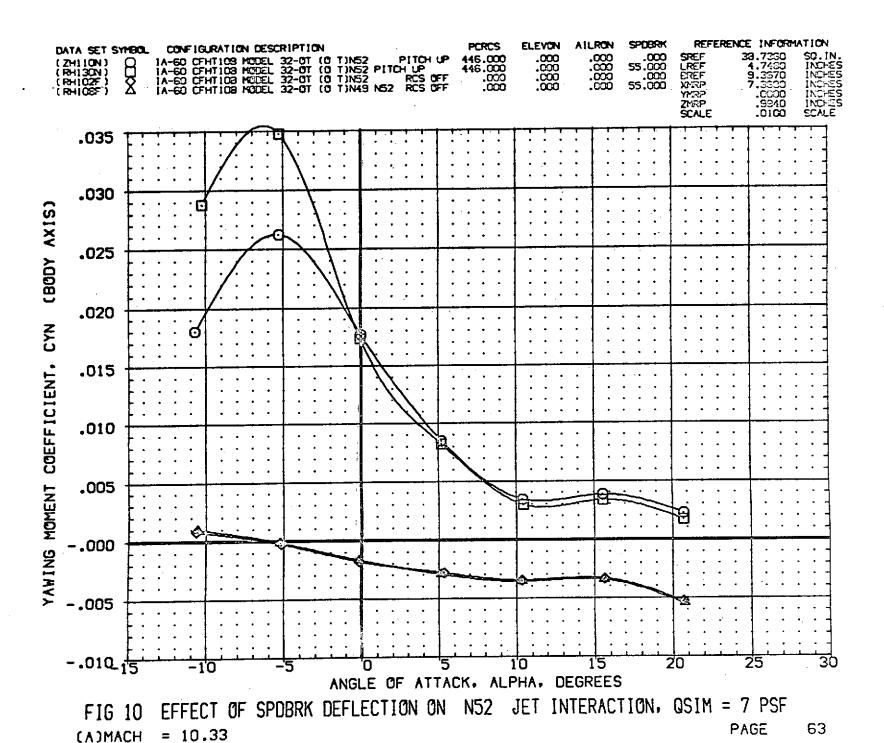
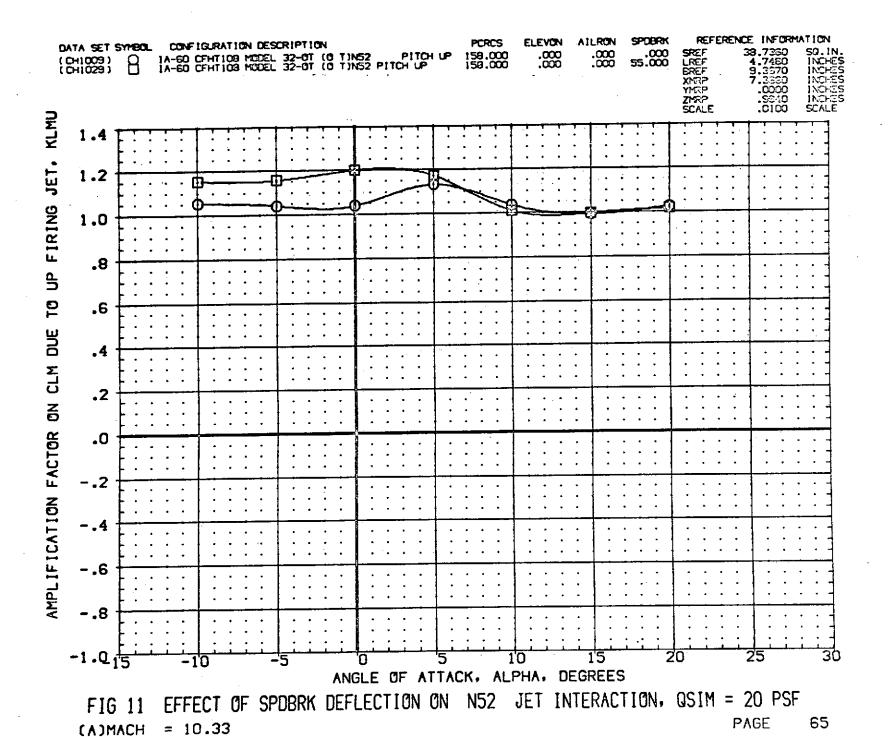
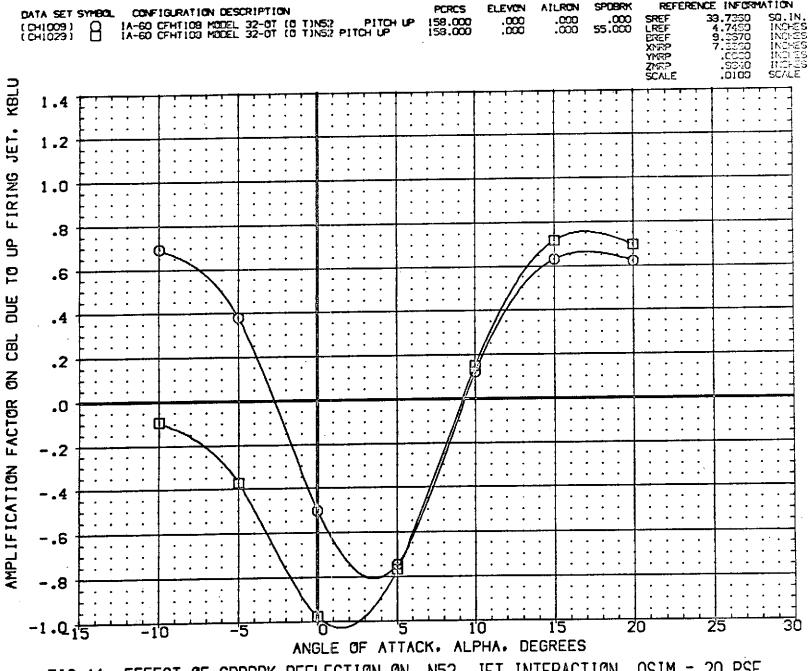




FIG 11 EFFECT OF SPOBRK DEFLECTION ON N52 JET INTERACTION, QSIM = 20 PSF

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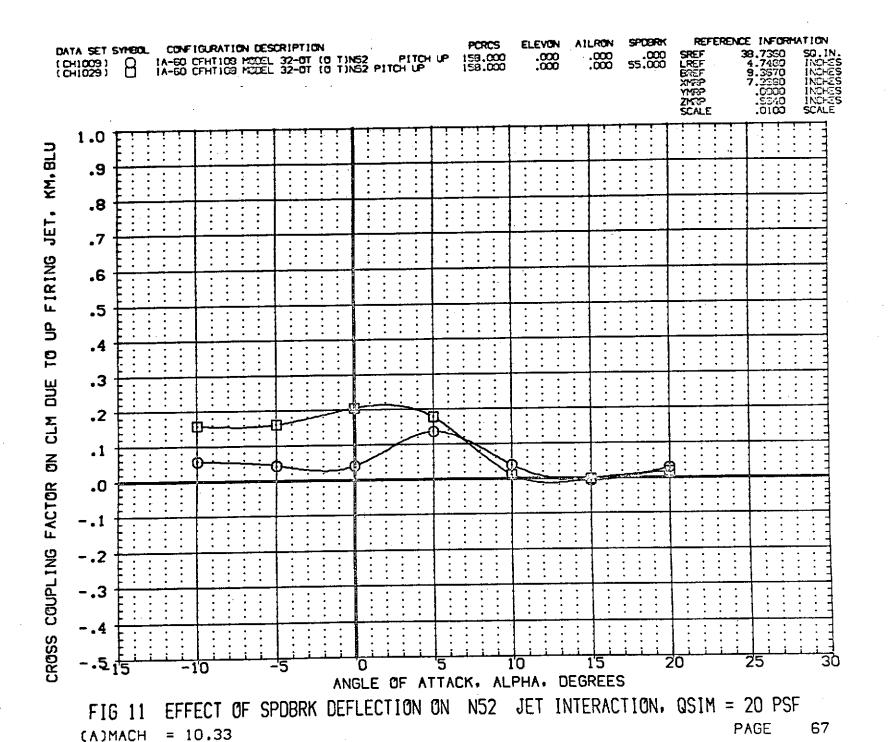




REFERENCE INFORMATION

SPOBRK

EFFECT OF SPDBRK DEFLECTION ON N52 JET INTERACTION, QSIM = 20 PSF FIG 11 PAGE 66 (A)MACH = 10.33



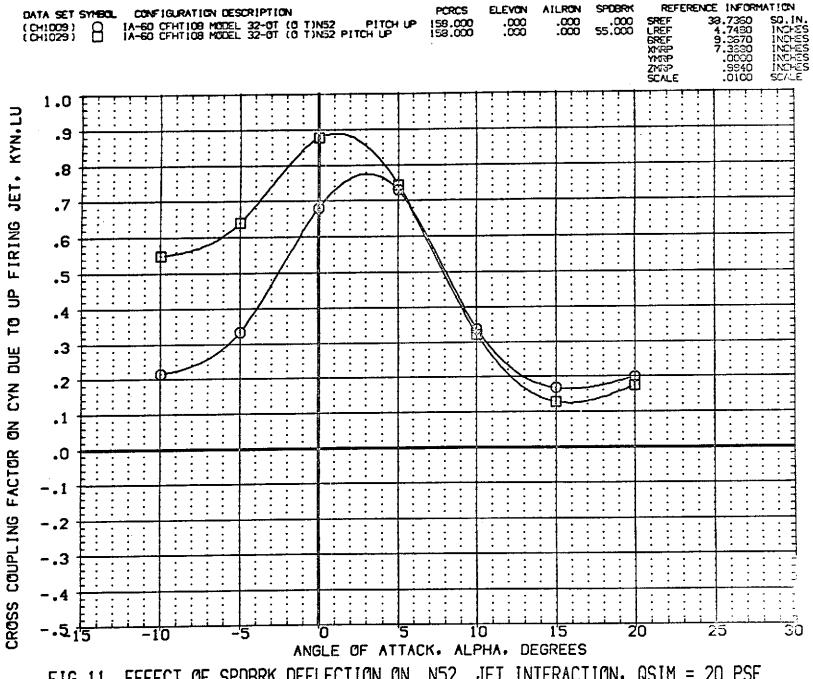
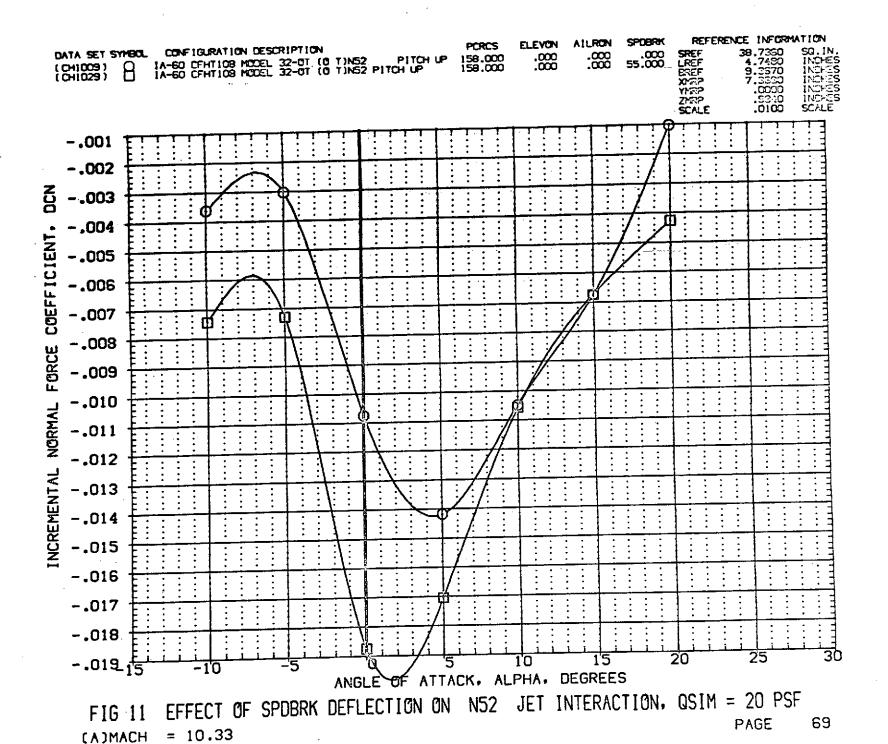


FIG 11 EFFECT OF SPDBRK DEFLECTION ON N52 JET INTERACTION, QSIM = 20 PSF
(A)MACH = 10.33
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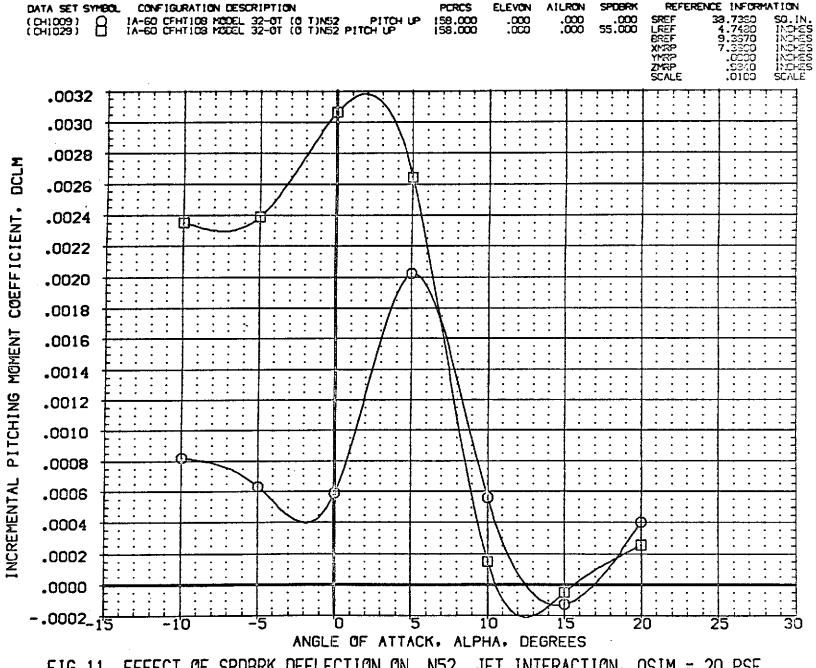
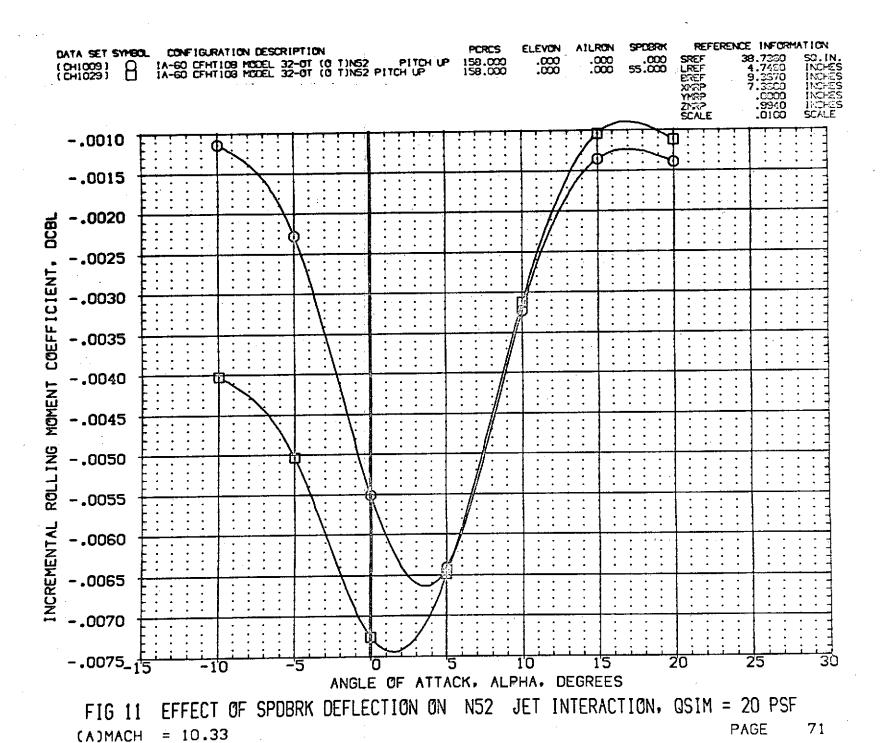


FIG 11 EFFECT OF SPOBRK DEFLECTION ON N52 JET INTERACTION, QSIM = 20 PSF

(A)MACH = 10.33

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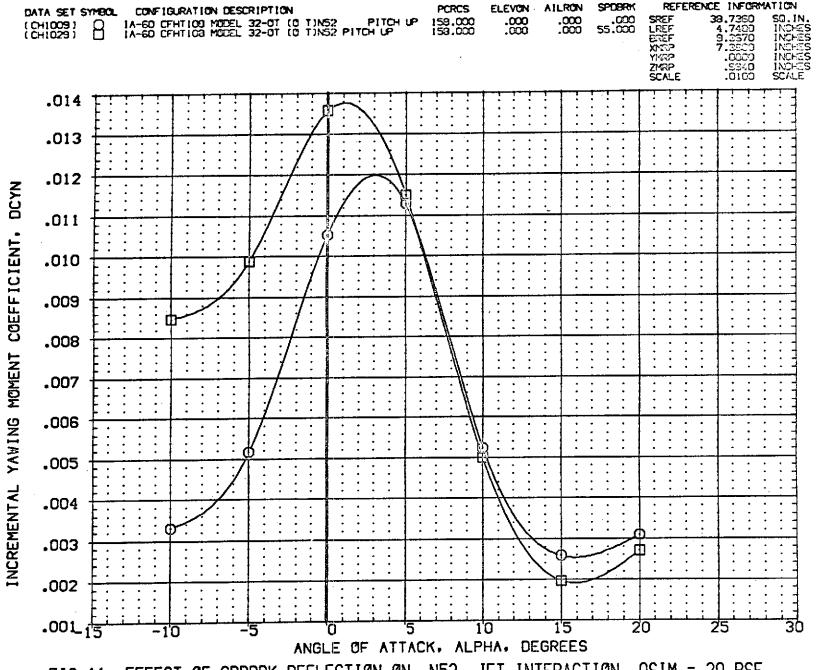


FIG 11 EFFECT OF SPDBRK DEFLECTION ON N52 JET INTERACTION, QSIM = 20 PSF

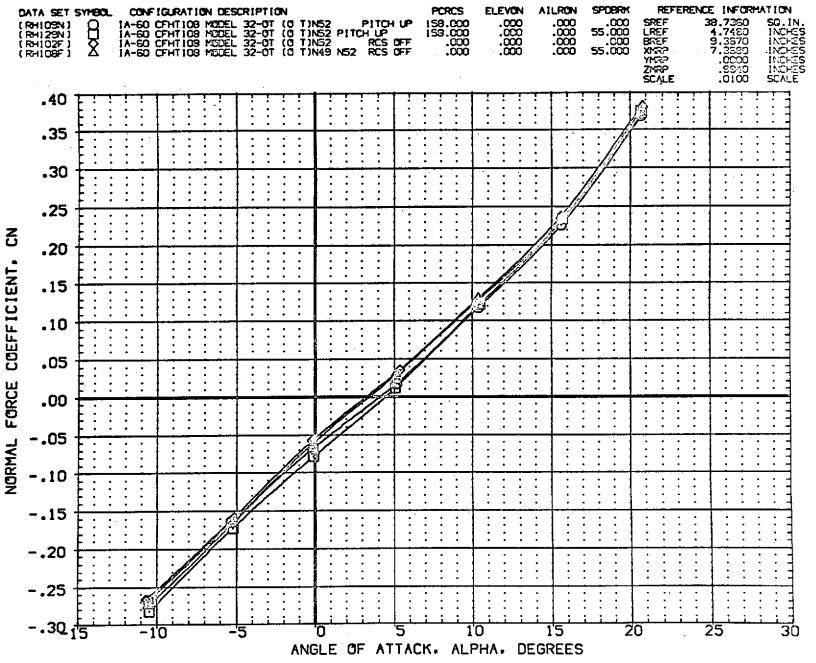


FIG 11 EFFECT OF SPDBRK DEFLECTION ON N52 JET INTERACTION, QSIM = 20 PSF
(A)MACH = 10.33

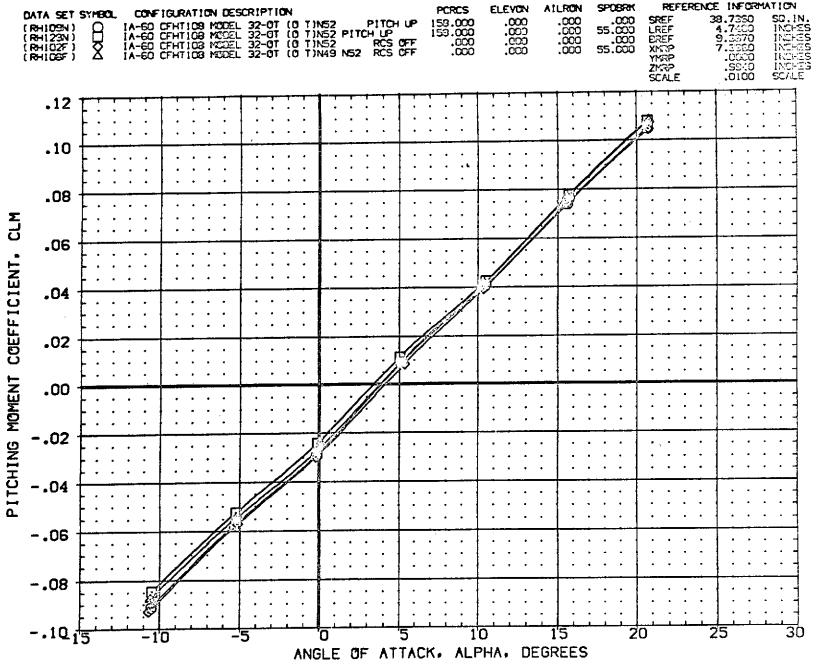


FIG 11 EFFECT OF SPDBRK DEFLECTION ON N52 JET INTERACTION, QSIM = 20 PSF

(A)MACH = 10.33

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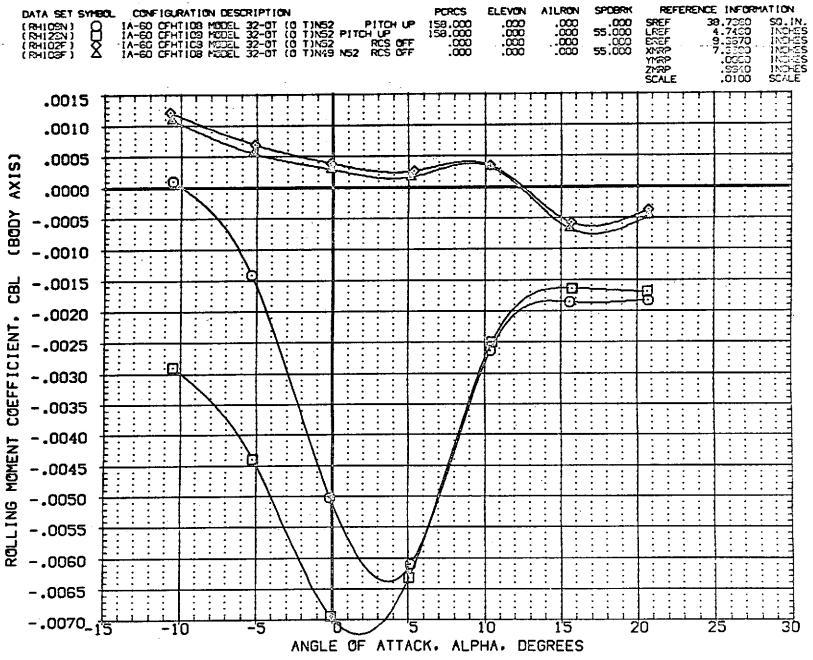


FIG 11 EFFECT OF SPDBRK DEFLECTION ON N52 JET INTERACTION, QSIM = 20 PSF
(A)MACH = 10.33

PAGE

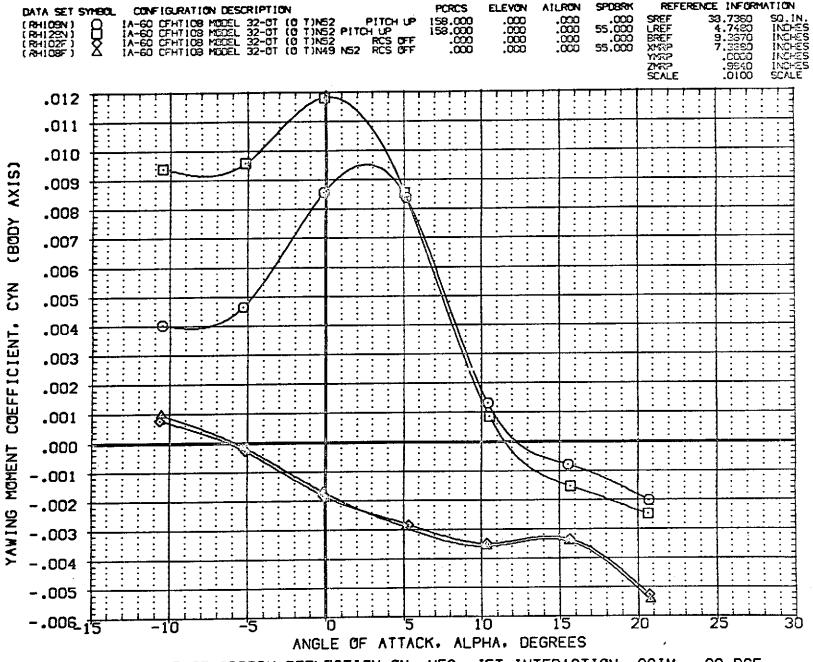


FIG 11 EFFECT OF SPDBRK DEFLECTION ON N52 JET INTERACTION, QSIM = 20 PSF

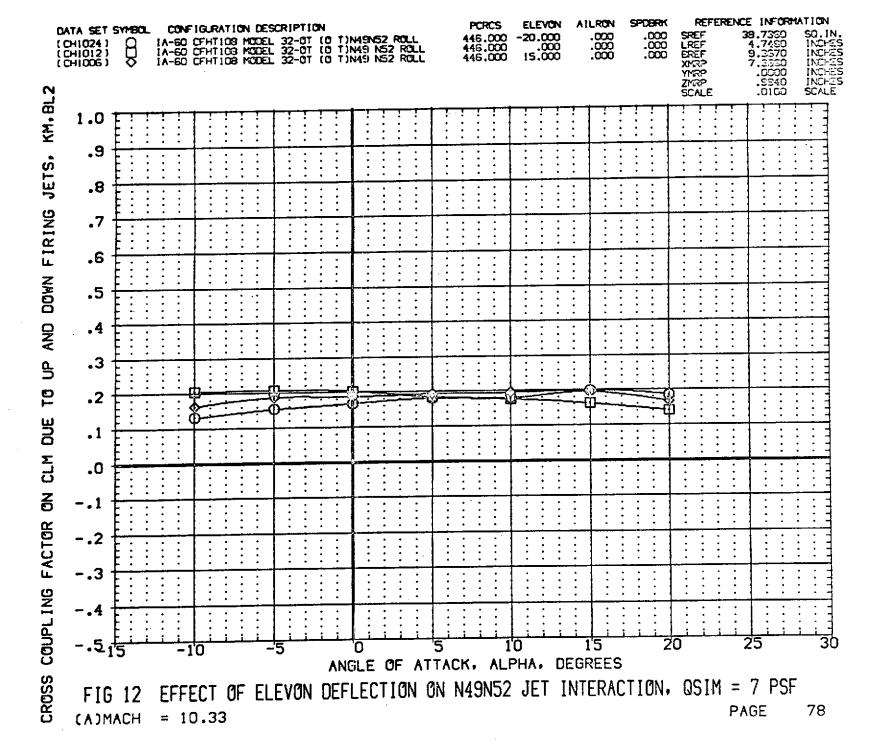
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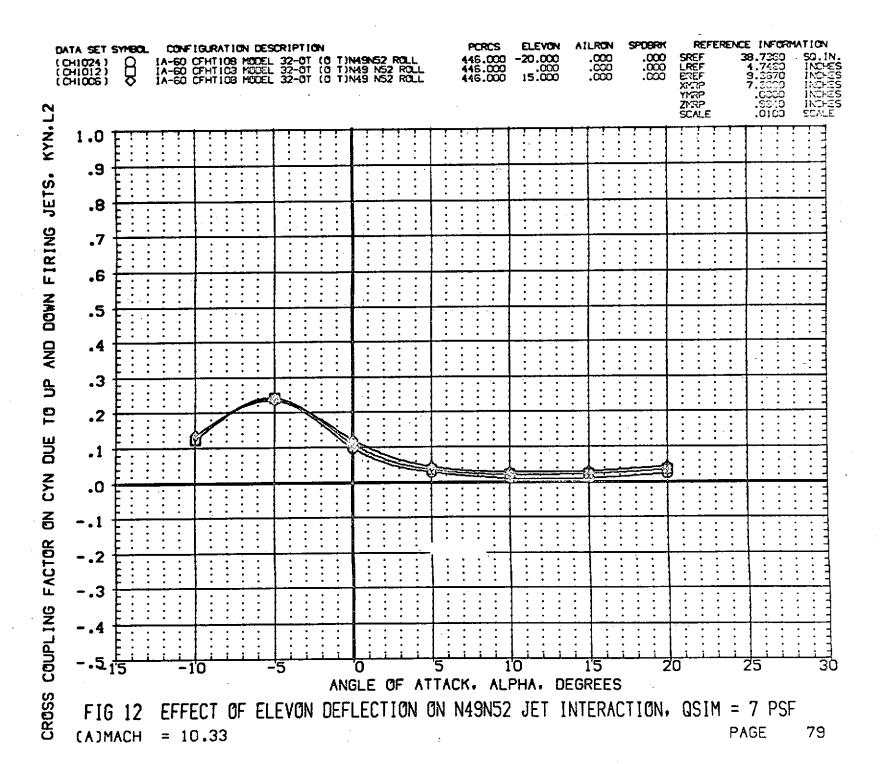
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FIG 12 EFFECT OF ELEVON DEFLECTION ON N49N52 JET INTERACTION, QSIM = 7 PSF

(A)MACH = 10.33





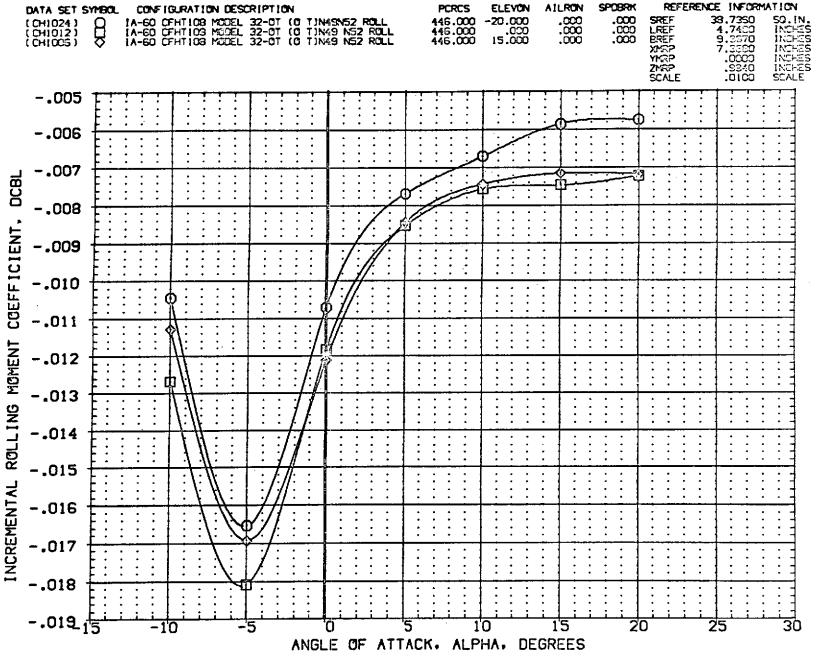
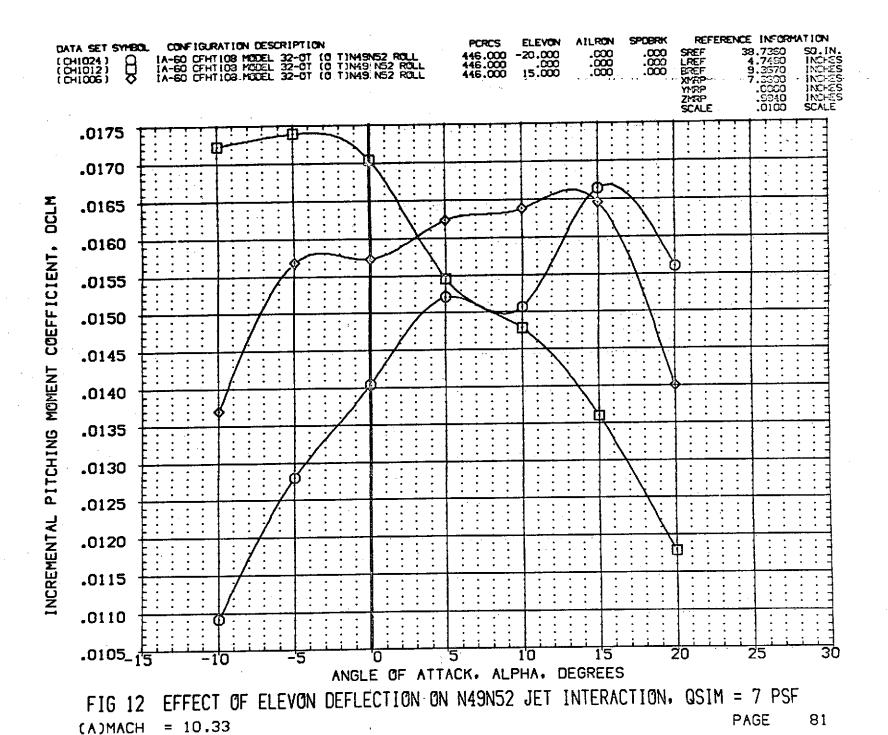


FIG 12 EFFECT OF ELEVON DEFLECTION ON N49N52 JET INTERACTION, QSIM = 7 PSF

(A)MACH = 10.33

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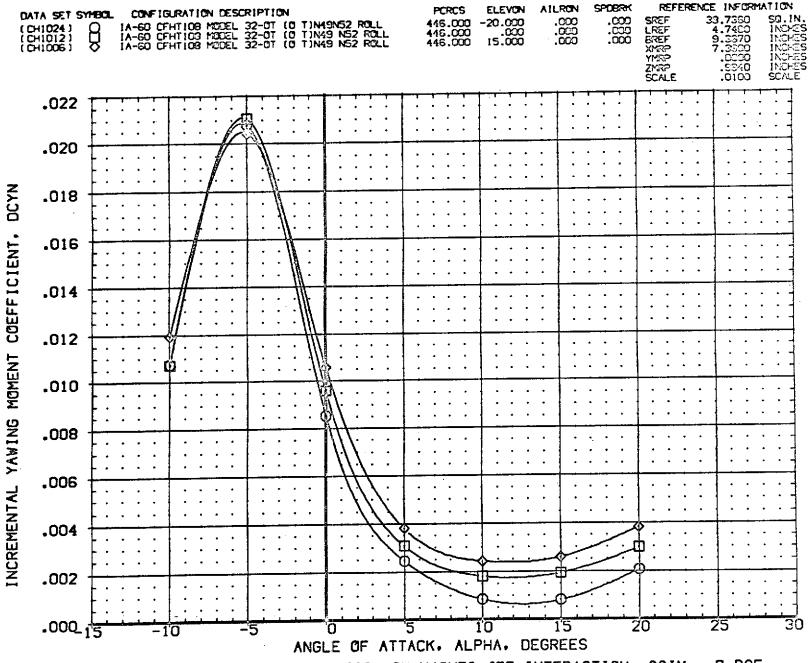


FIG 12 EFFECT OF ELEVON DEFLECTION ON N49N52 JET INTERACTION, QSIM = 7 PSF

(A)MACH = 10.33°

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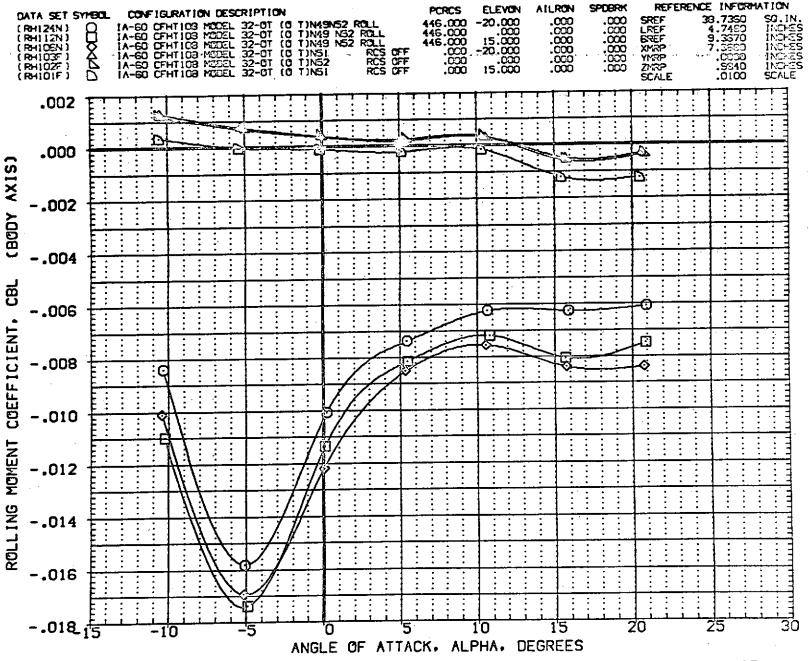


FIG 12 EFFECT OF ELEVON DEFLECTION ON N49N52 JET INTERACTION, QSIM = 7 PSF
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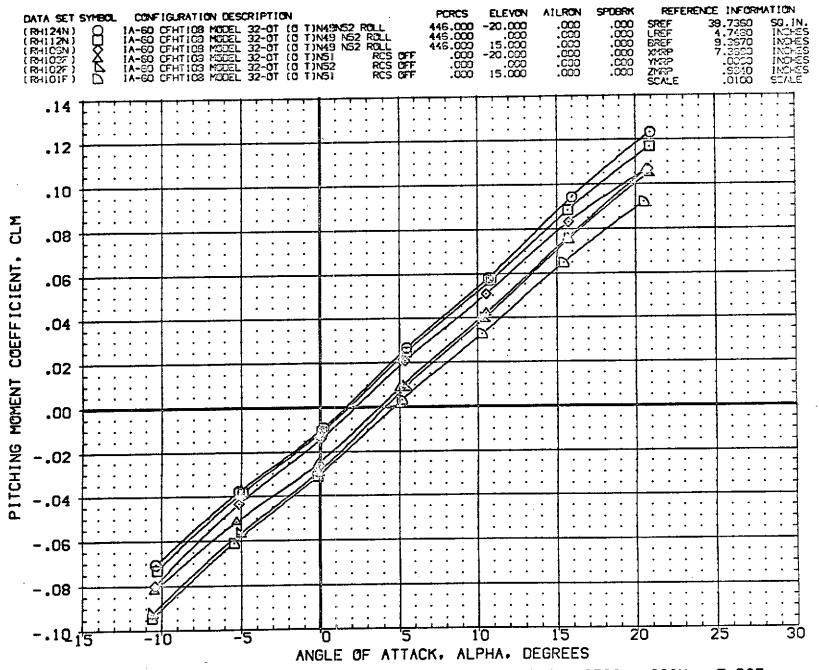


FIG 12 EFFECT OF ELEVON DEFLECTION ON N49N52 JET INTERACTION, QSIM = 7 PSF

(A)MACH = 10.33

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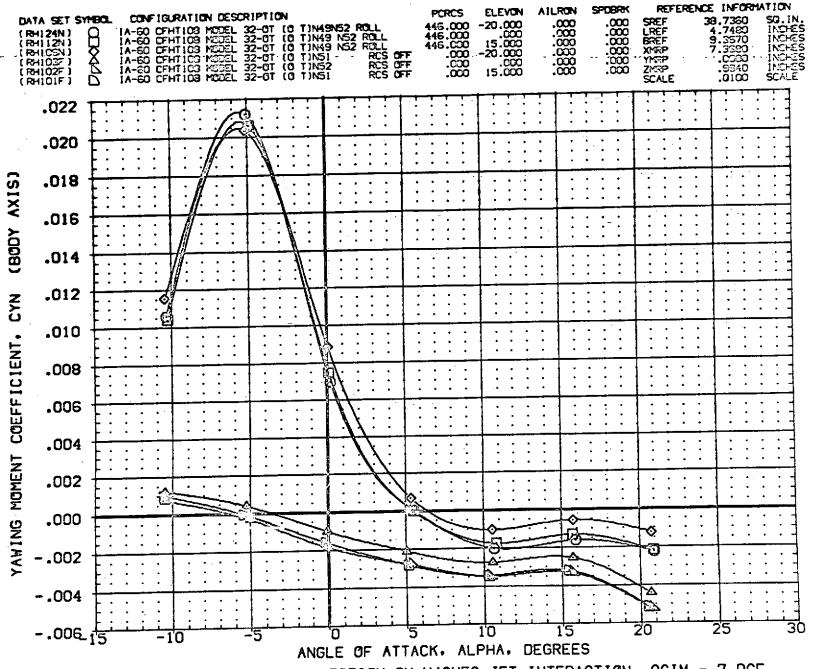


FIG 12 EFFECT OF ELEVON DEFLECTION ON N49N52 JET INTERACTION, QSIM = 7 PSF
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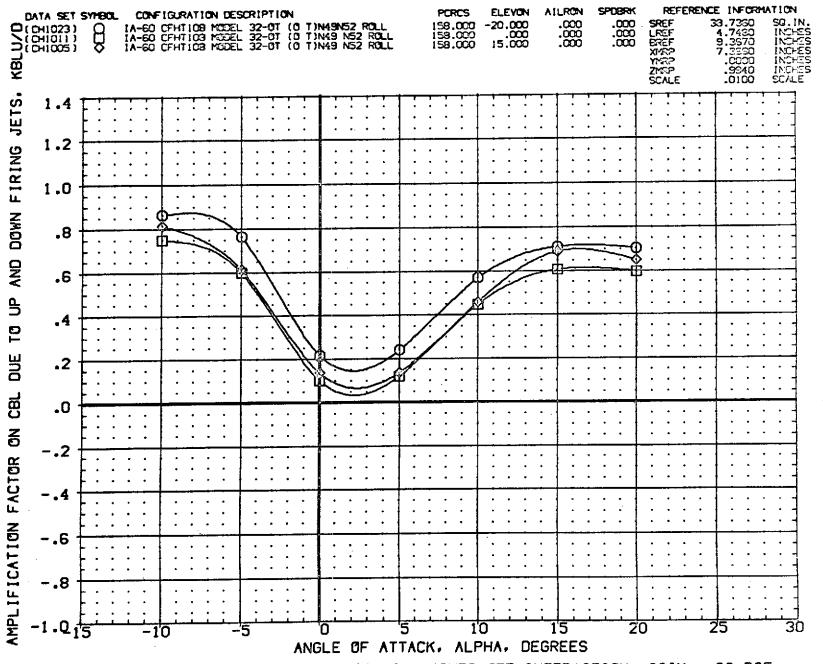
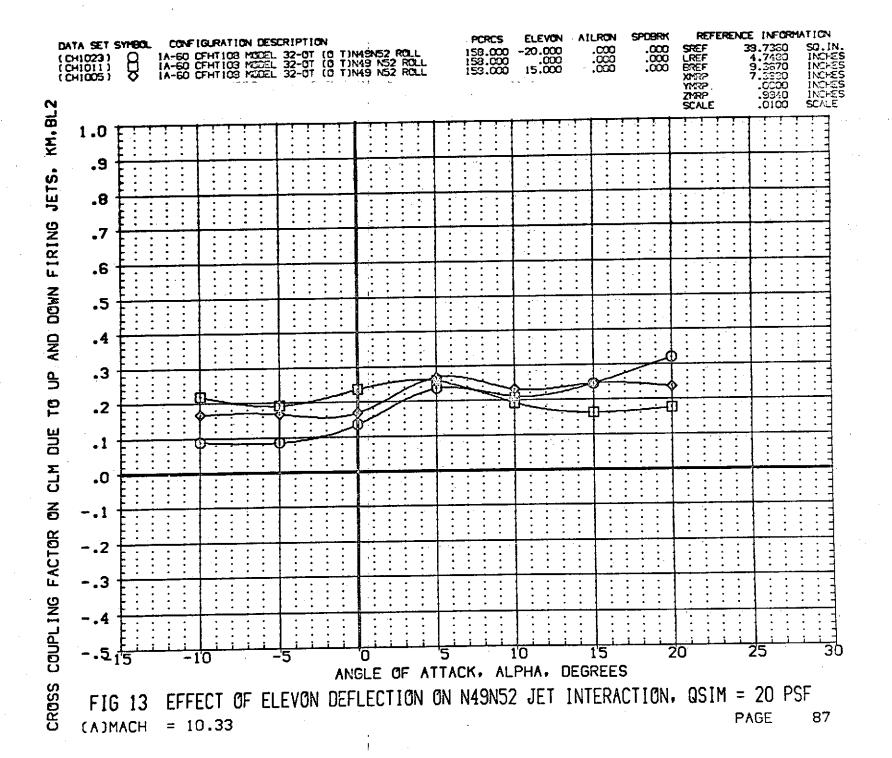
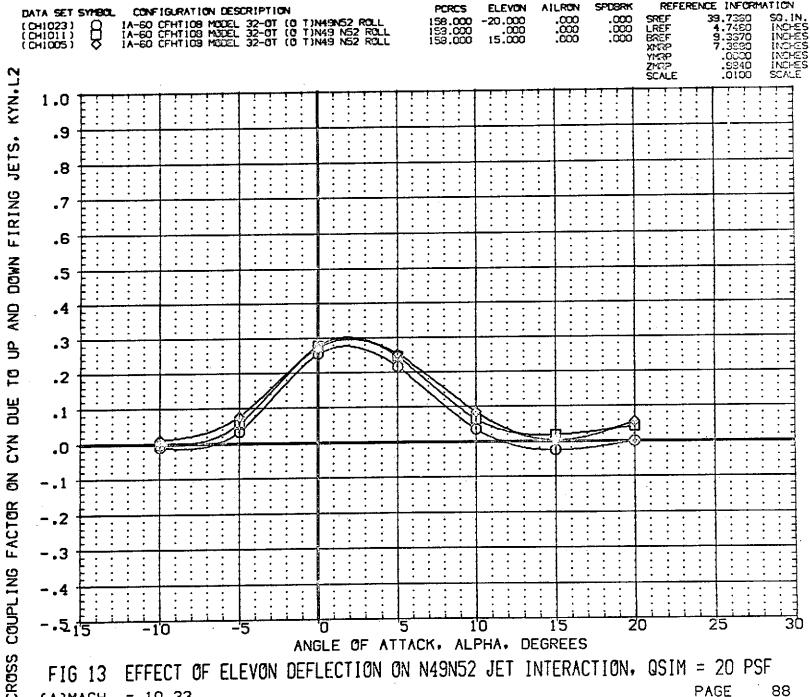


FIG 13 EFFECT OF ELEVON DEFLECTION ON N49N52 JET INTERACTION, QSIM = 20 PSF

(A)MACH = 10.33

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PAGE = 10.33(A)MACH

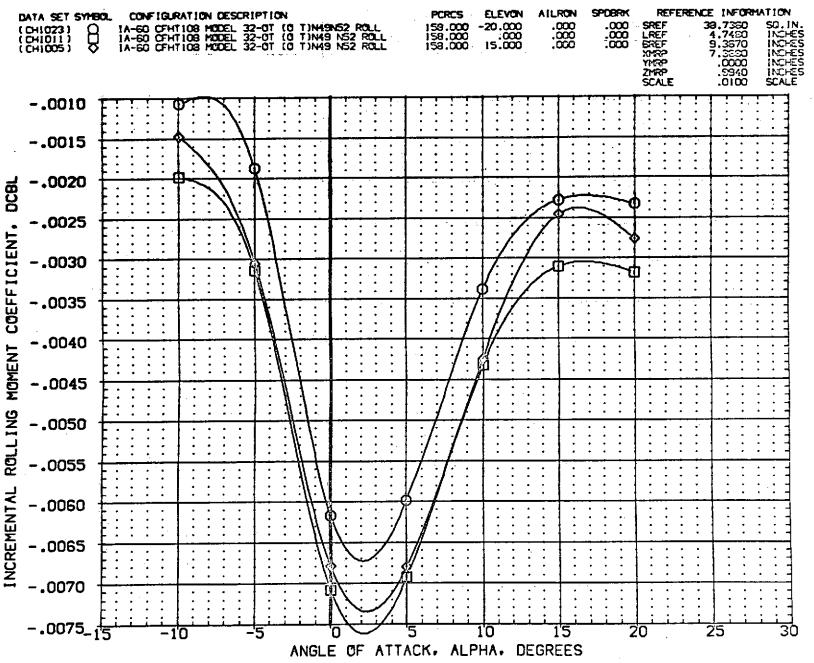


FIG 13 EFFECT OF ELEVON DEFLECTION ON N49N52 JET INTERACTION, QSIM = 20 PSF

(A)MACH = 10.33

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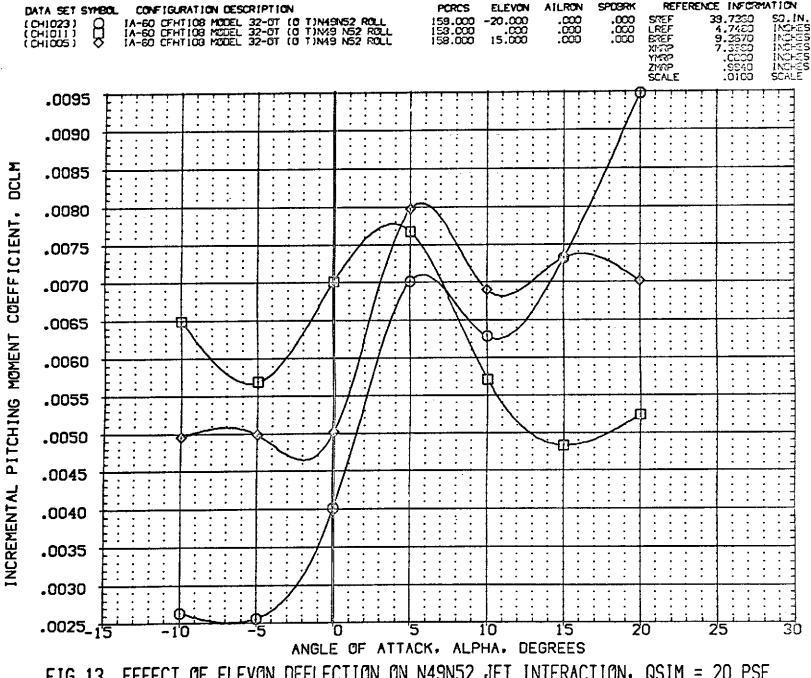
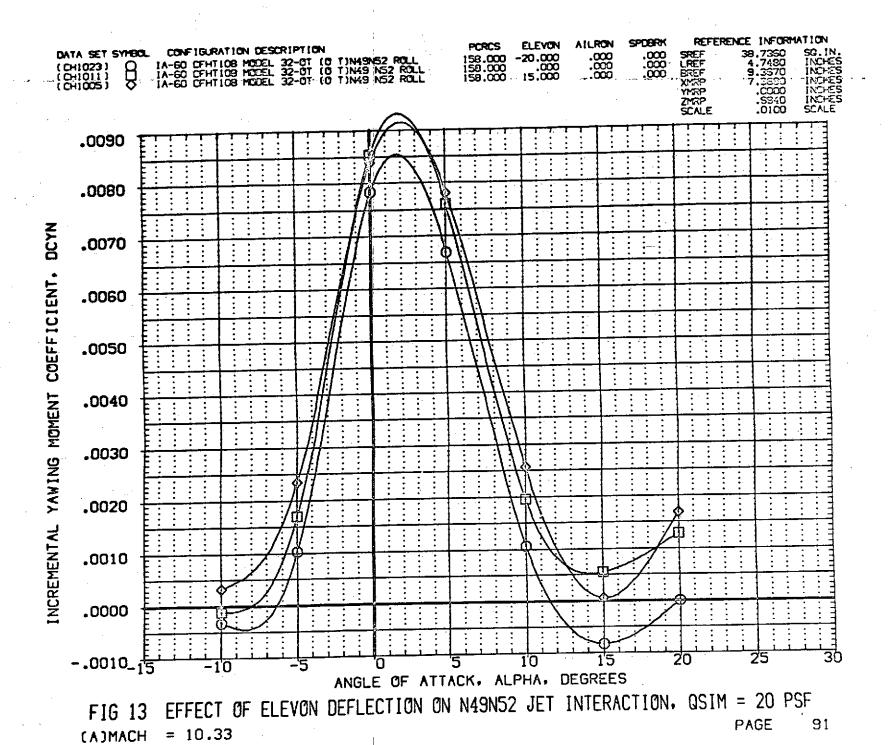


FIG 13 EFFECT OF ELEVON DEFLECTION ON N49N52 JET INTERACTION, QSIM = 20 PSF

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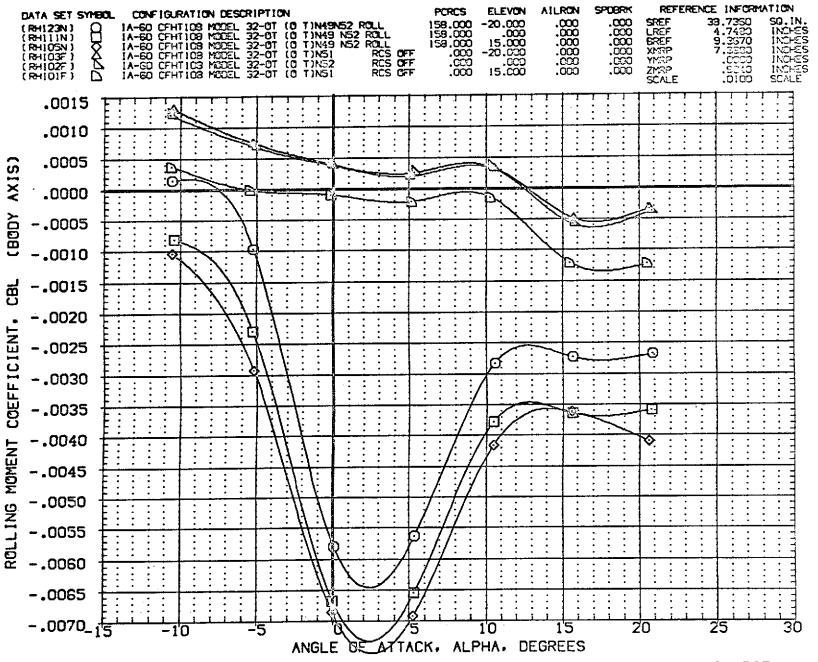


FIG 13 EFFECT OF ELEVON DEFLECTION ON N49N52 JET INTERACTION, QSIM = 20 PSF

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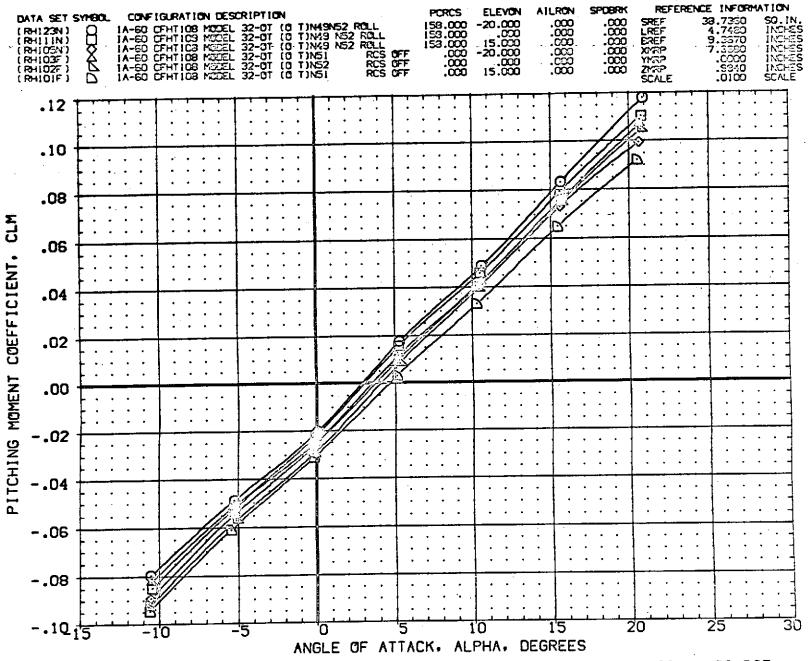


FIG 13 EFFECT OF ELEVON DEFLECTION ON N49N52 JET INTERACTION, QSIM = 20 PSF
(A)MACH = 10.33

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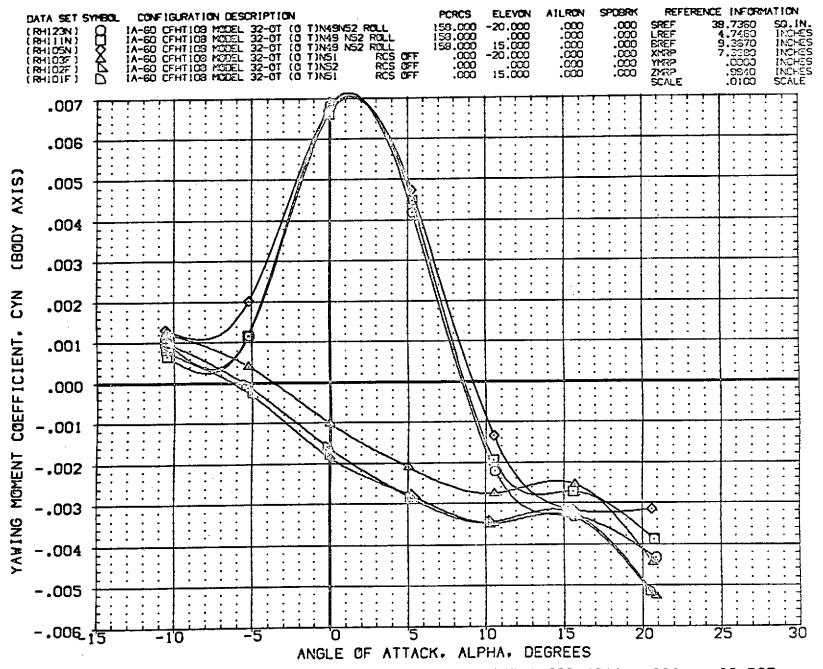


FIG 13 EFFECT OF ELEVON DEFLECTION ON N49N52 JET INTERACTION, QSIM = 20 PSF

[A)MACH = 10.33

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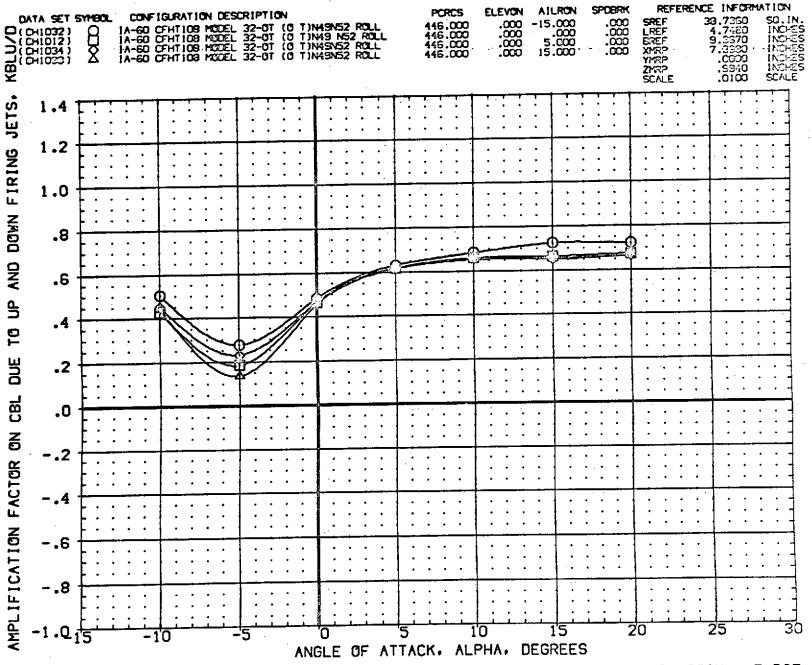
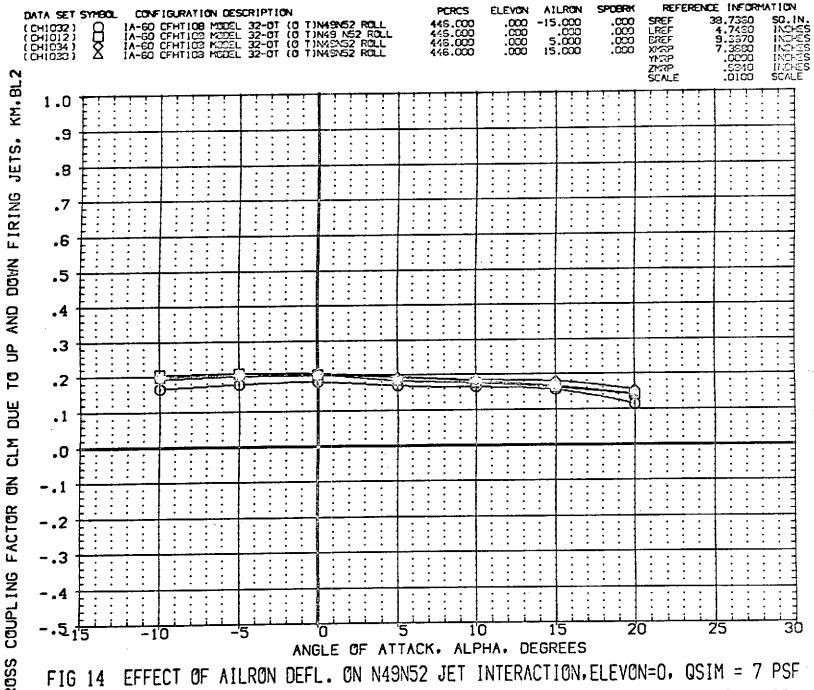
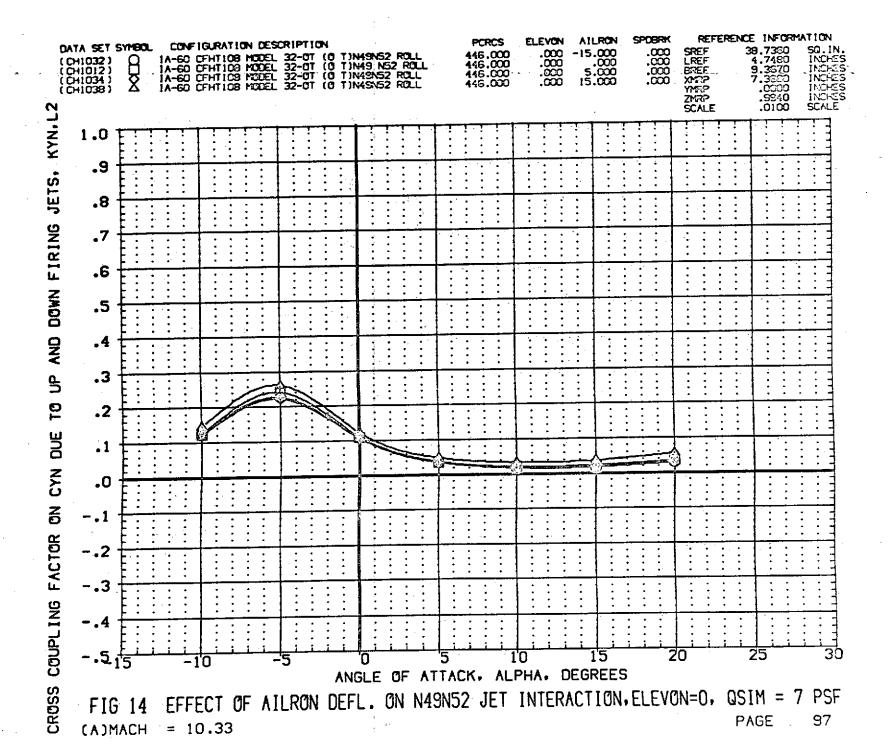


FIG 14 EFFECT OF AILRON DEFL. ON N49N52 JET INTERACTION, ELEVON=0, QSIM = 7 PSI (A)MACH = 10.33



PAGE 96 = 10.33CADMACH



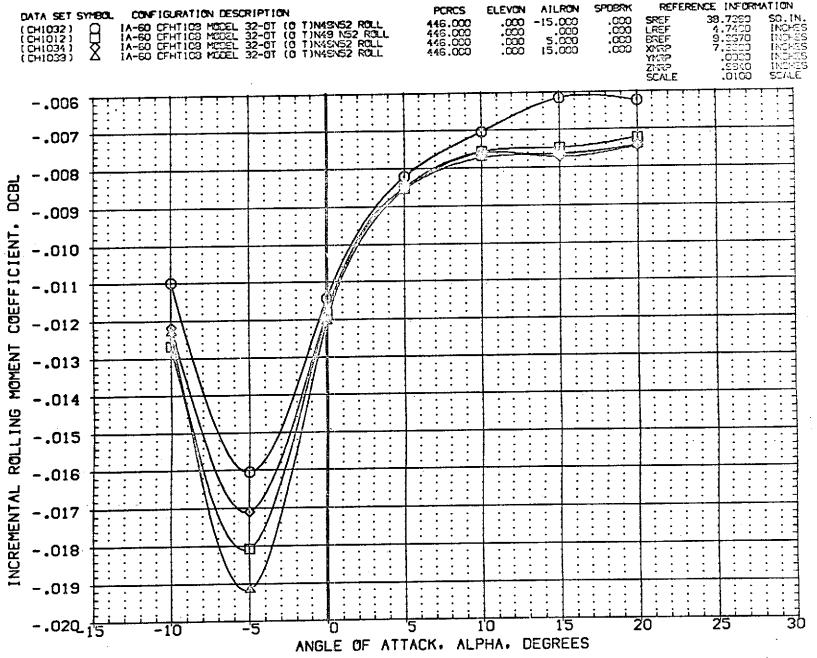


FIG 14 EFFECT OF AILRON DEFL. ON N49N52 JET INTERACTION, ELEVON=0, QSIM = 7 PSF

(A)MACH = 10.33

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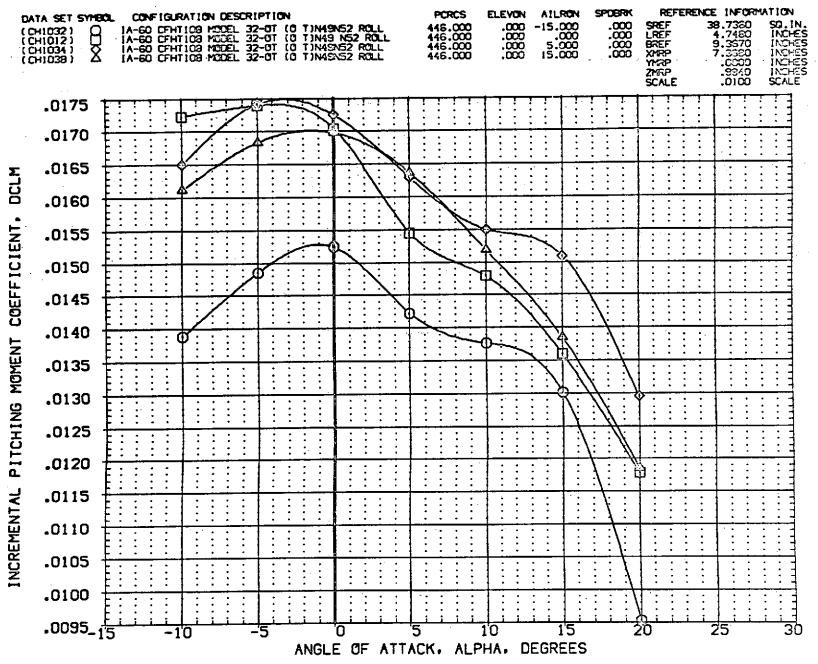


FIG 14 EFFECT OF AILRON DEFL. ON N49N52 JET INTERACTION, ELEVON=0, QSIM = 7 PSF

(A)MACH = 10.33

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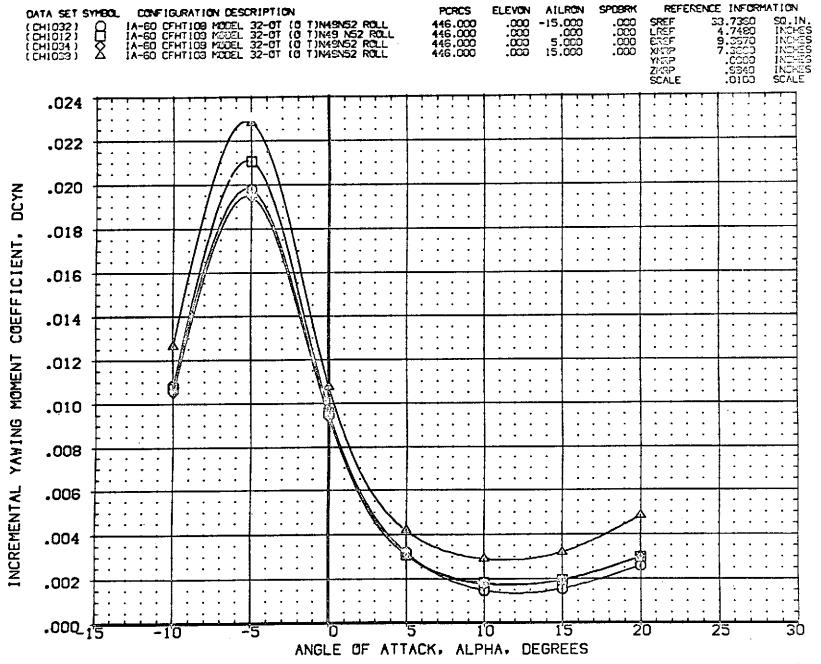


FIG 14 EFFECT OF AILRON DEFL. ON N49N52 JET INTERACTION. ELEVON=0. QSIM = 7 PSF
(A)MACH = 10.33
PAGE 100

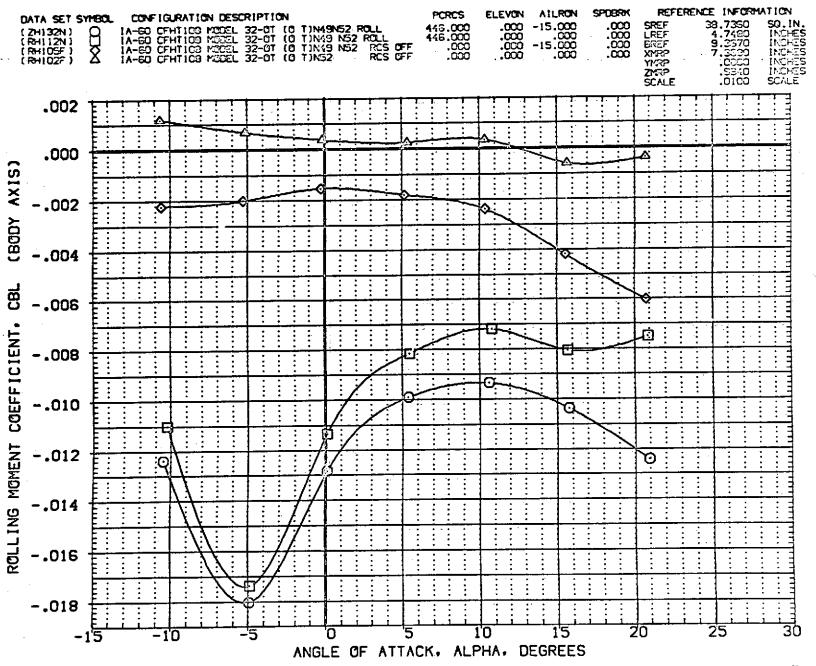


FIG 14 EFFECT OF AILRON DEFL. ON N49N52 JET INTERACTION, ELEVON=0, QSIM = 7 PSF

(A)MACH = 10.33

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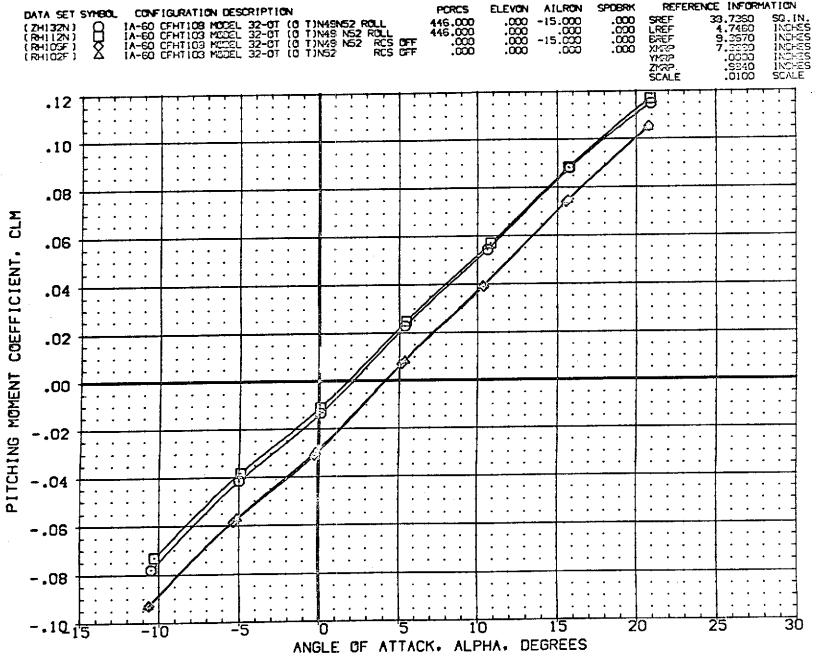


FIG 14 EFFECT OF AILRON DEFL. ON N49N52 JET INTERACTION, ELEVON=0, QSIM = 7 PSF
(A)MACH = 10.33

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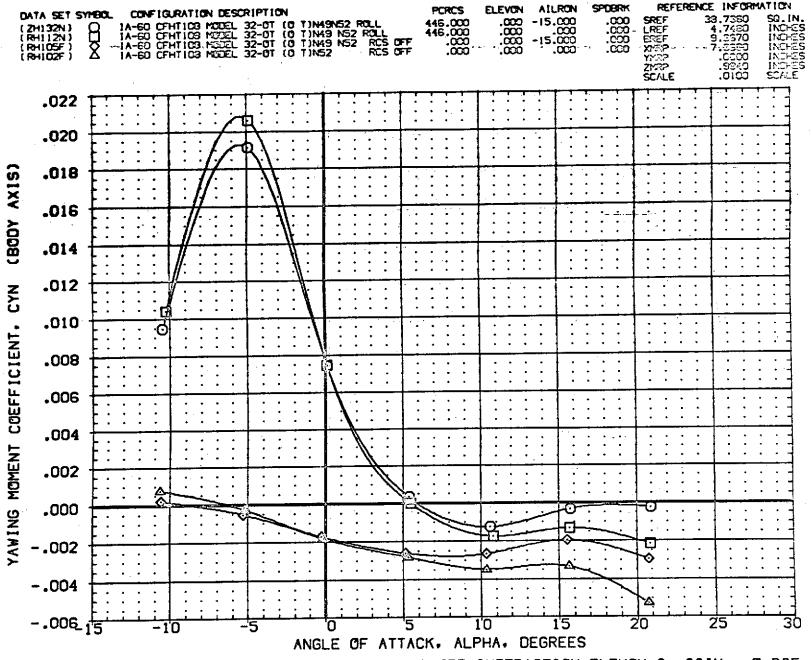


FIG 14 EFFECT OF AILRON DEFL. ON N49N52 JET INTERACTION, ELEVON=0. QSIM = 7 PSF
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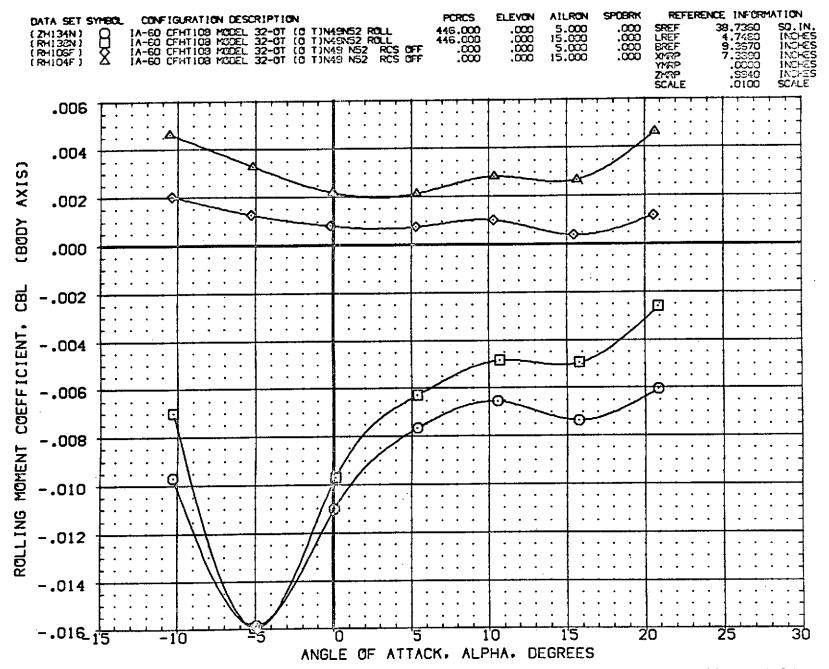


FIG 14 EFFECT OF AILRON DEFL. ON N49N52 JET INTERACTION, ELEVON=0, QSIM = 7 PSF
(A)MACH = 10.33
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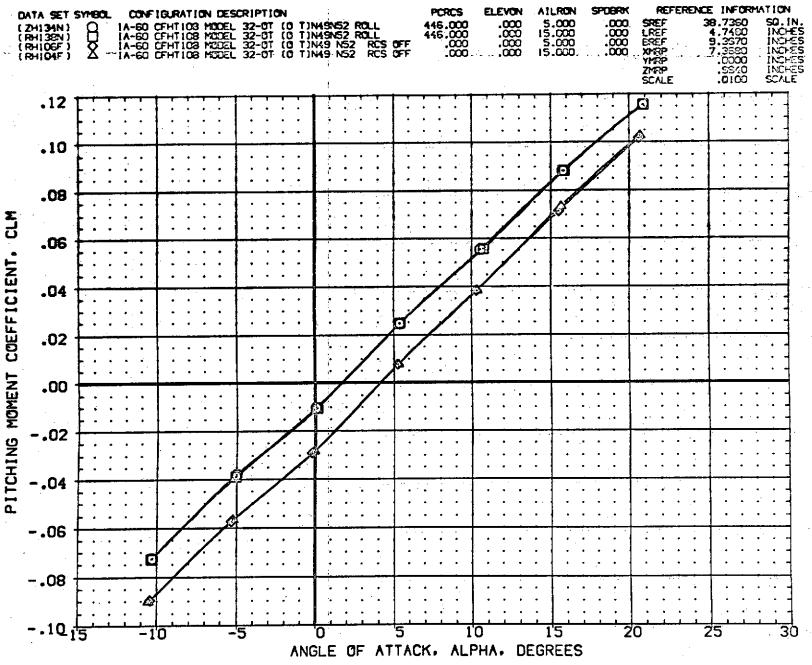


FIG 14 EFFECT OF AILRON DEFL. ON N49N52 JET INTERACTION. ELEVON=0. QSIM = 7 PSF

(A)MACH = 10.33

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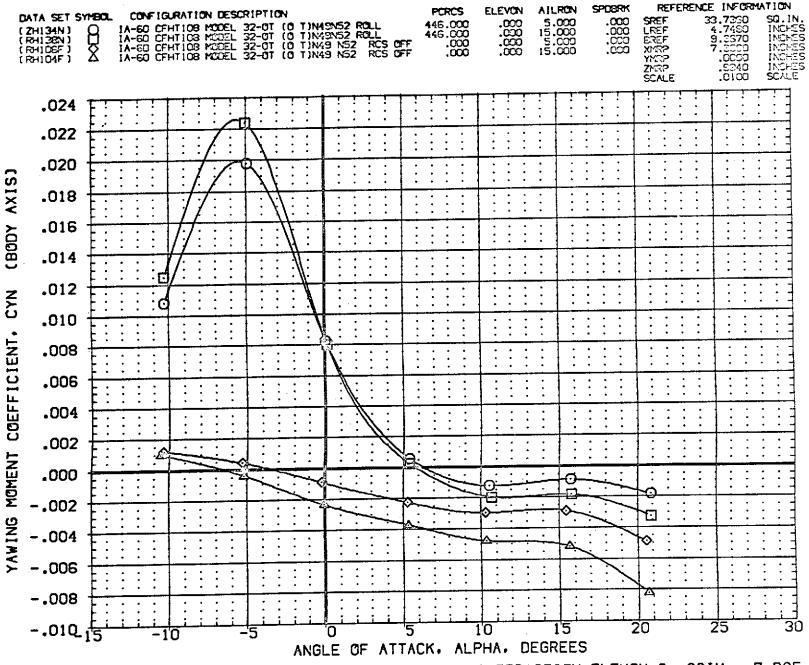


FIG 14 EFFECT OF AILRON DEFL. ON N49N52 JET INTERACTION, ELEVON=0, QSIM = 7 PSF

(A)MACH = 10.33

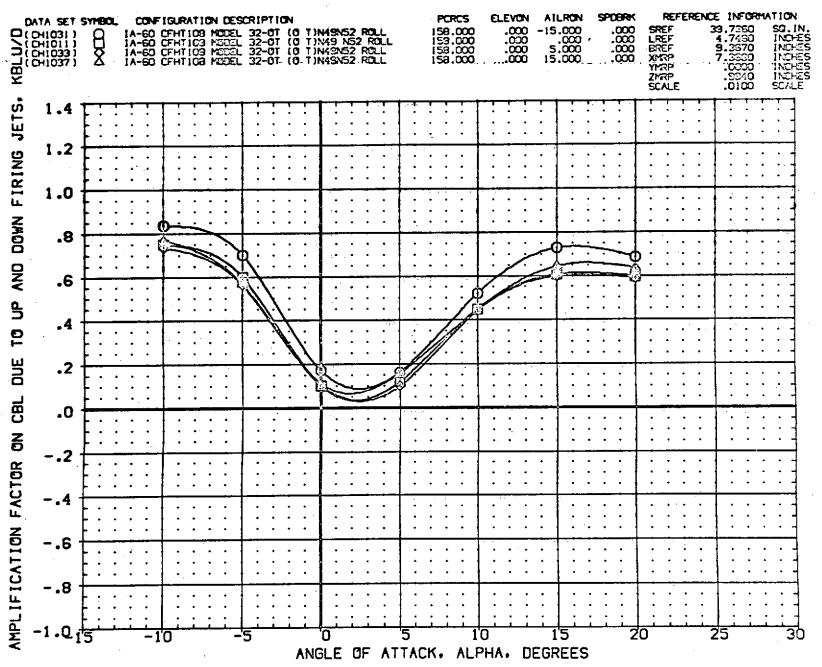
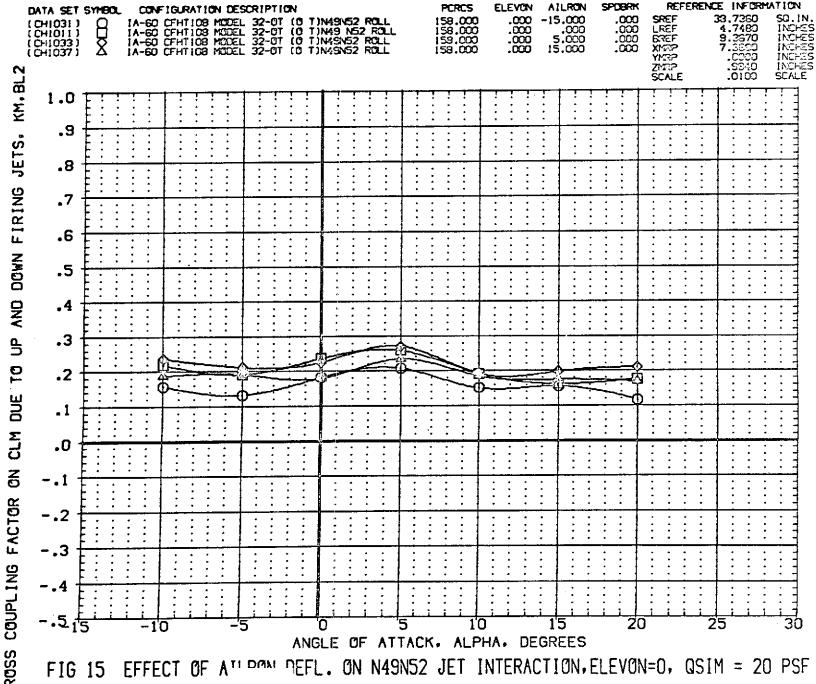


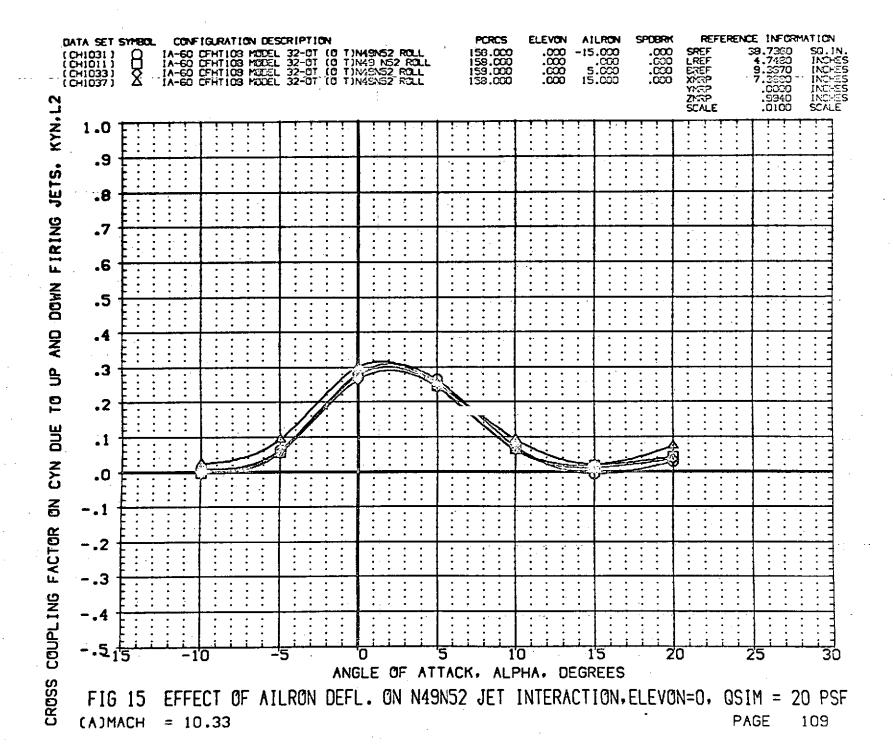
FIG 15 EFFECT OF AILRON DEFL. ON N49N52 JET INTERACTION, ELEVON=0, QSIM = 20 PSF

(A)MACH = 10.33

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PAGE 108 CADMACH = 10.33



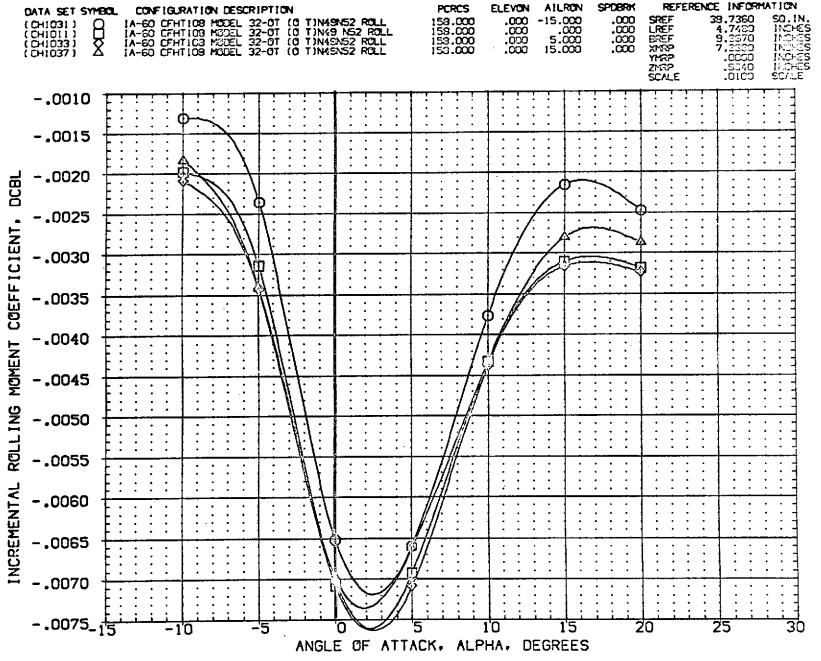


FIG 15 EFFECT OF AILRON DEFL. ON N49N52 JET INTERACTION, ELEVON=0, QSIM = 20 PSF
(A)MACH = 10.33
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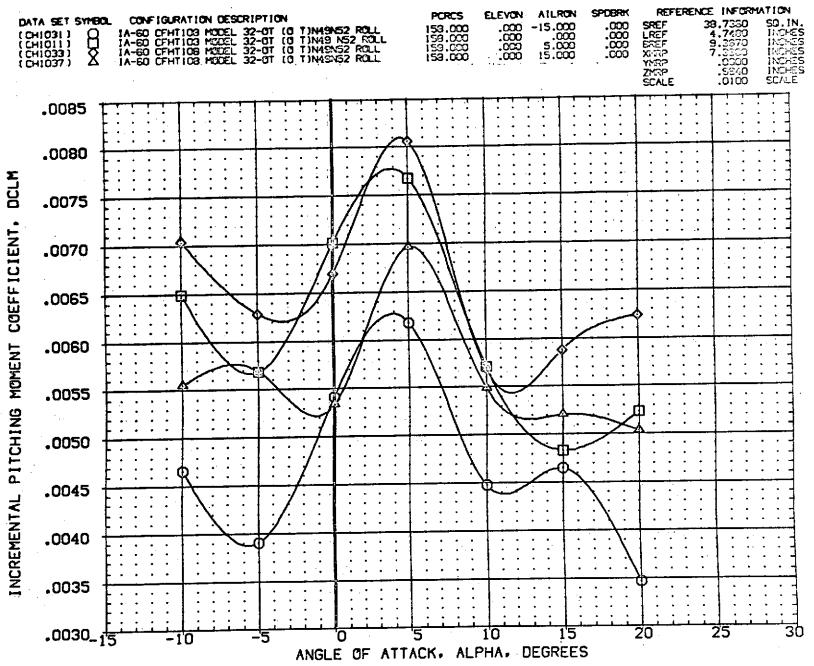


FIG 15 EFFECT OF AILRON DEFL. ON N49N52 JET INTERACTION, ELEVON=0, QSIM = 20 PSF

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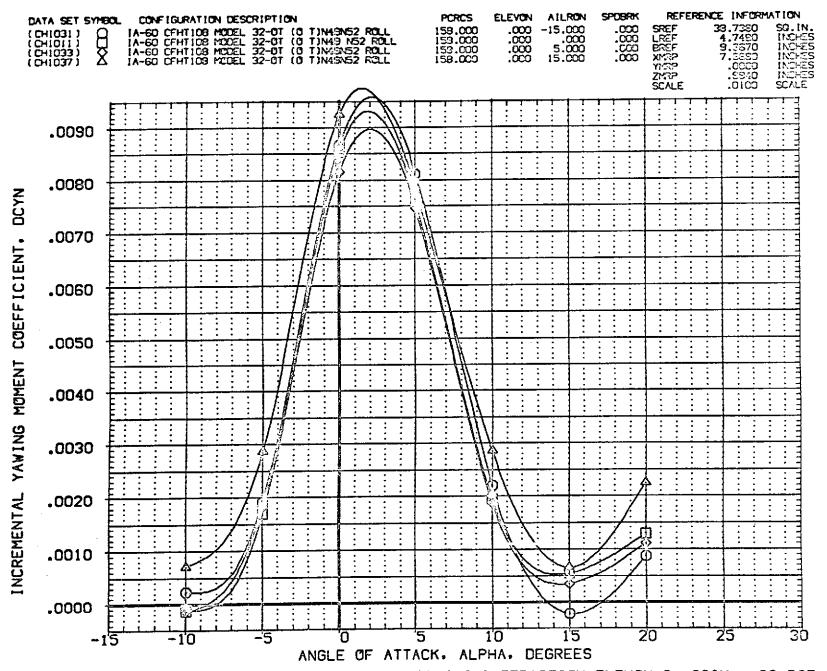


FIG 15 EFFECT OF AILRON DEFL. ON N49N52 JET INTERACTION, ELEVON=0, QSIM = 20 PSF
(A)MACH = 10.33

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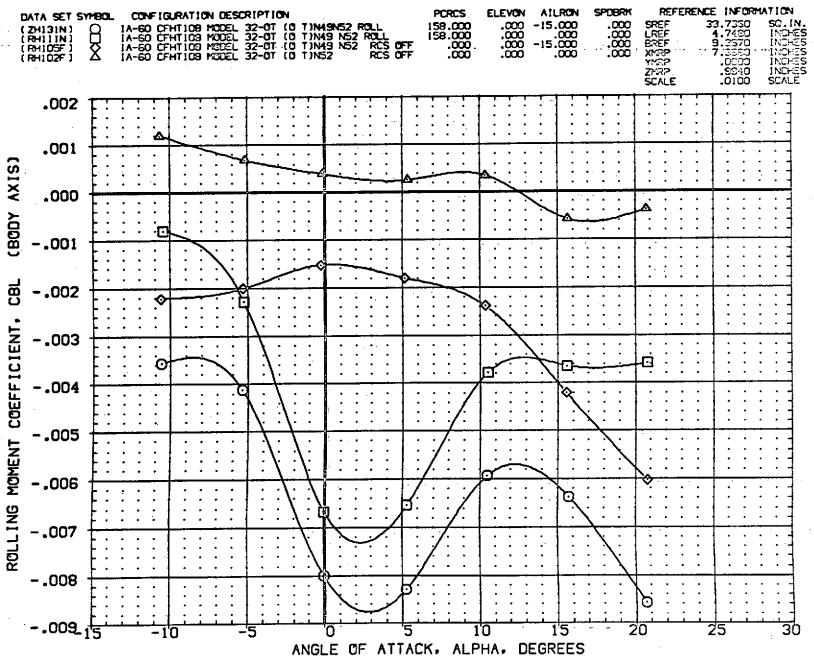


FIG 15 EFFECT OF AILRON DEFL. ON N49N52 JET INTERACTION, ELEVON=0, QSIM = 20 PSF
(A)MACH = 10.33

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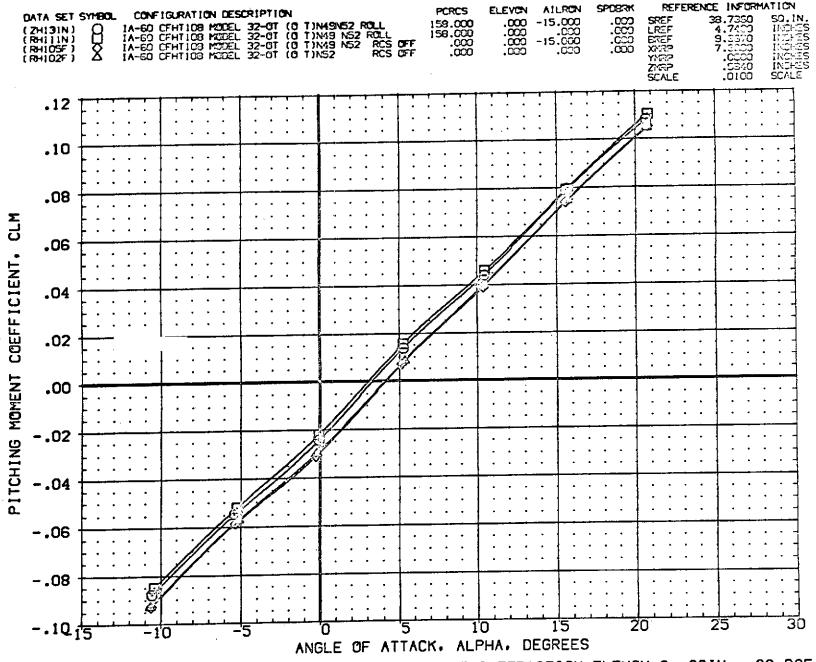


FIG 15 EFFECT OF AILRON DEFL. ON N49N52 JET INTERACTION, ELEVON=0, QSIM = 20 PSF
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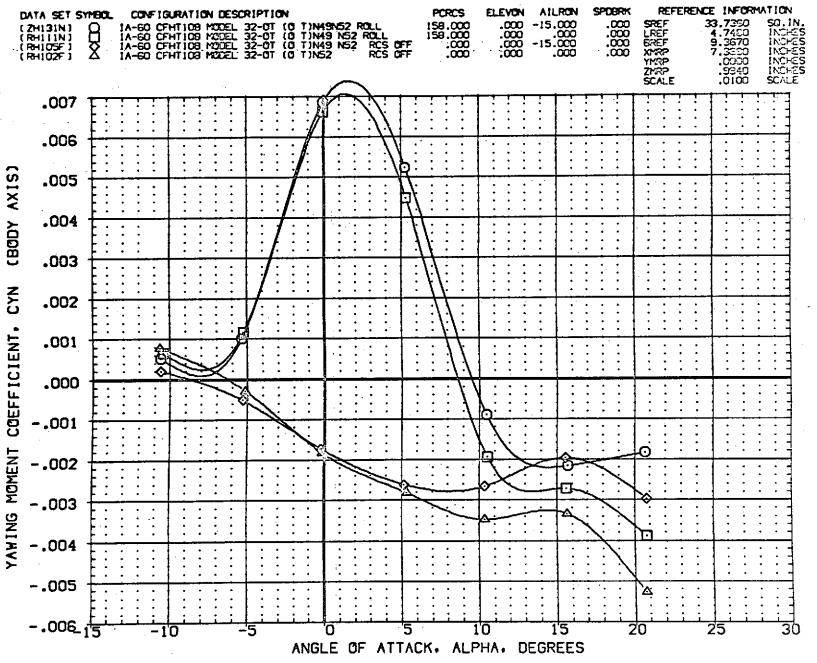


FIG 15 EFFECT OF AILRON DEFL. ON N49N52 JET INTERACTION, ELEVON=0, QSIM = 20 PSF

(A)MACH = 10.33

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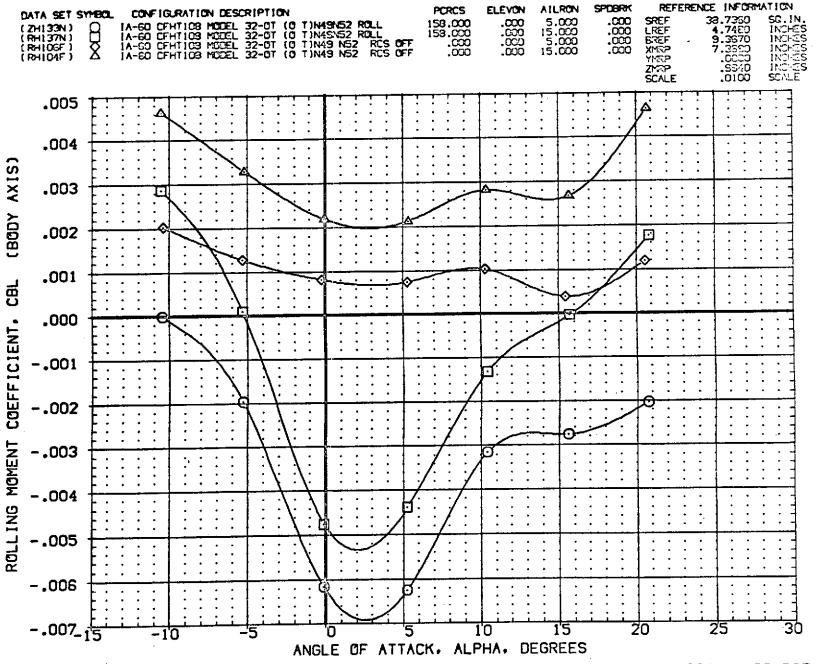


FIG 15 EFFECT OF AILRON DEFL. ON N49N52 JET INTERACTION, ELEVON=0, QSIM = 20 PSF
(A)MACH = 10.33

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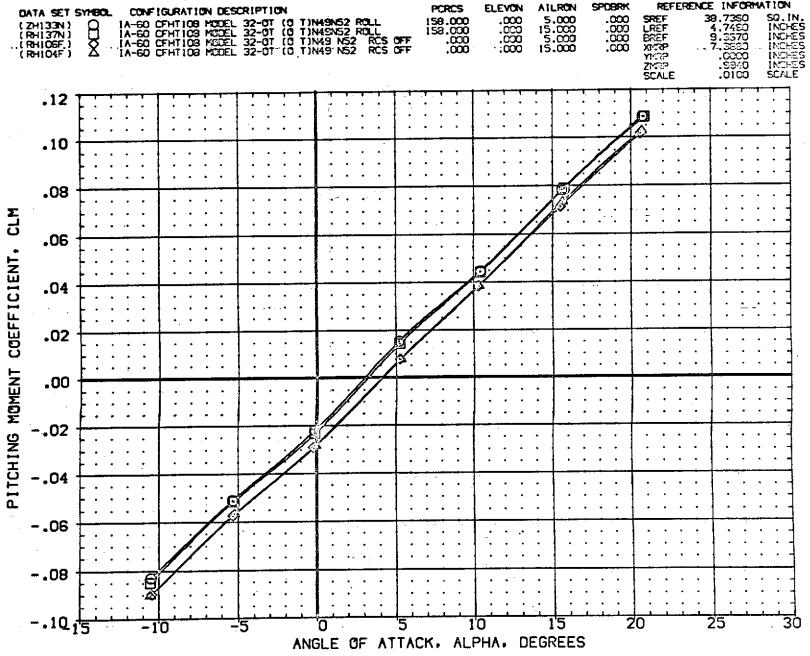


FIG 15 EFFECT OF AILRON DEFL. ON N49N52 JET INTERACTION, ELEVON=0, QSIM = 20 PSF
(A)MACH = 10.33

PAGE 117

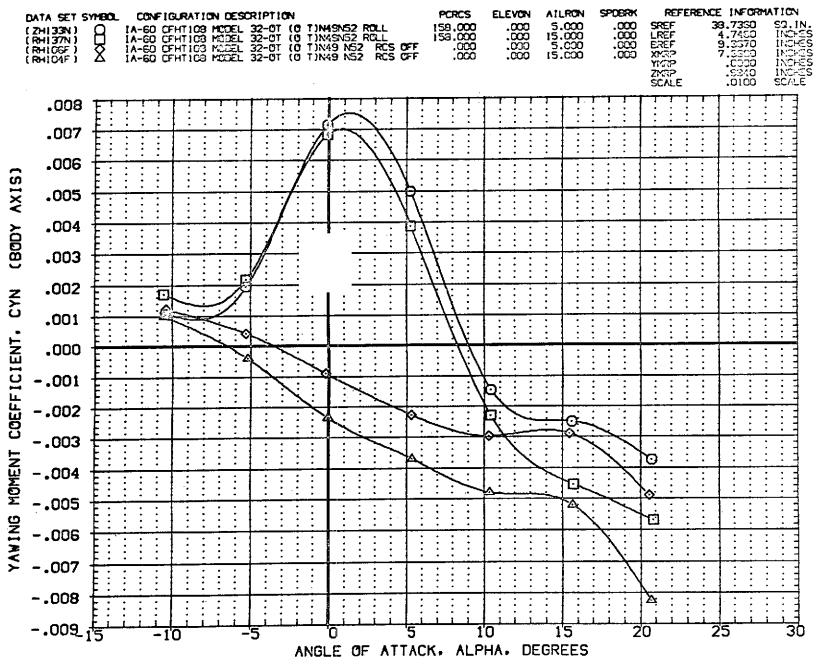


FIG 15 EFFECT OF AILRON DEFL. ON N49N52 JET INTERACTION, ELEVON=0, QSIM = 20 PSF
(A)MACH = 10.33
PAGE 118

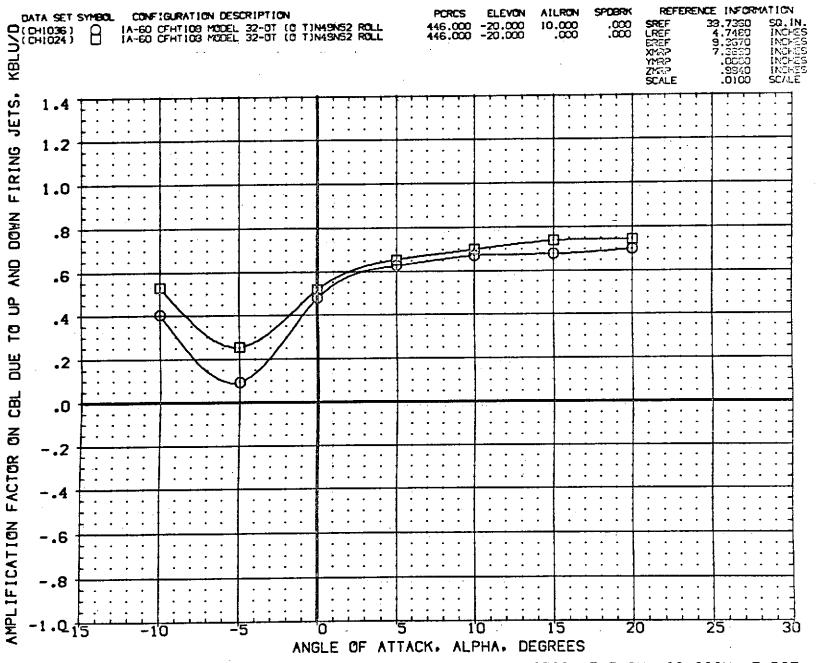
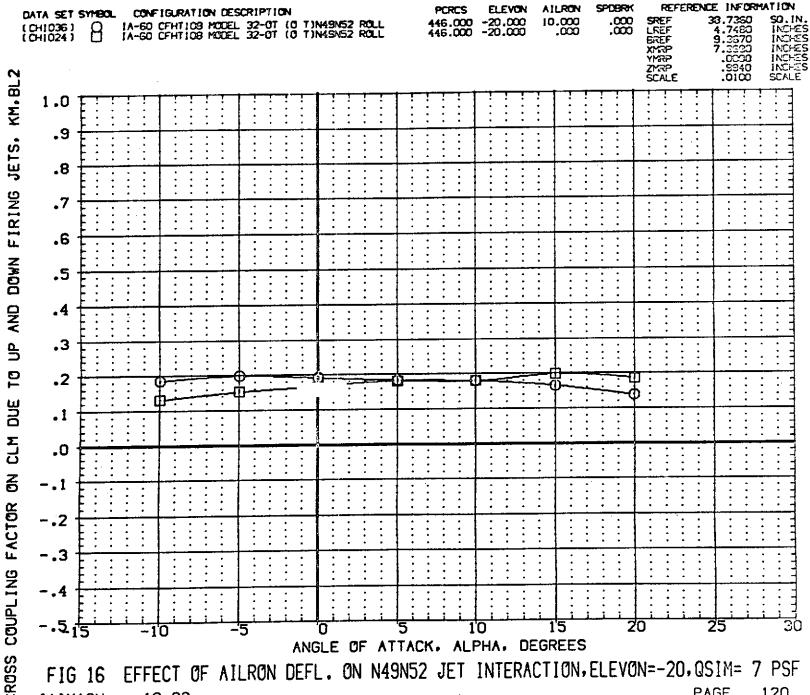


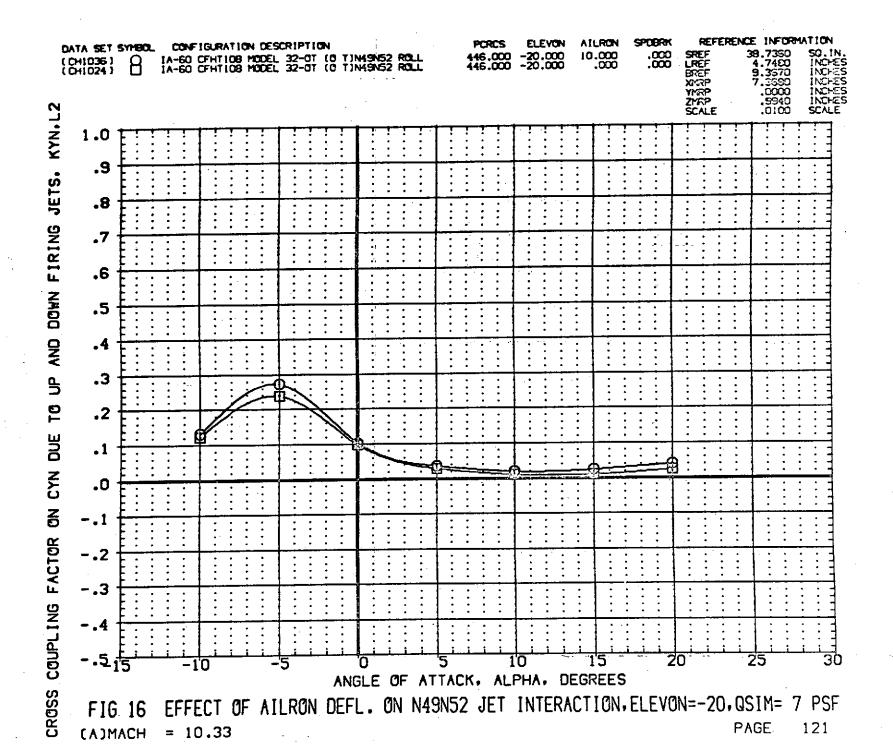
FIG 16 EFFECT OF AILRON DEFL. ON N49N52 JET INTERACTION, ELEVON=-20, QSIM= 7 PSF

(A)MACH = 10.33

PAGE 119



PAGE 120 (A)MACH = 10.33



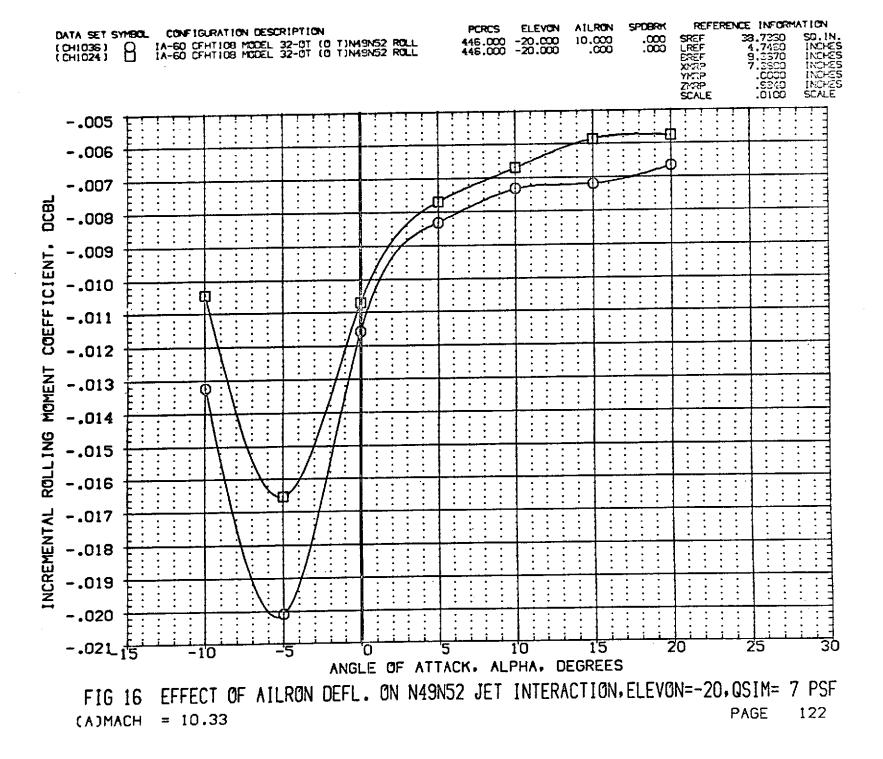
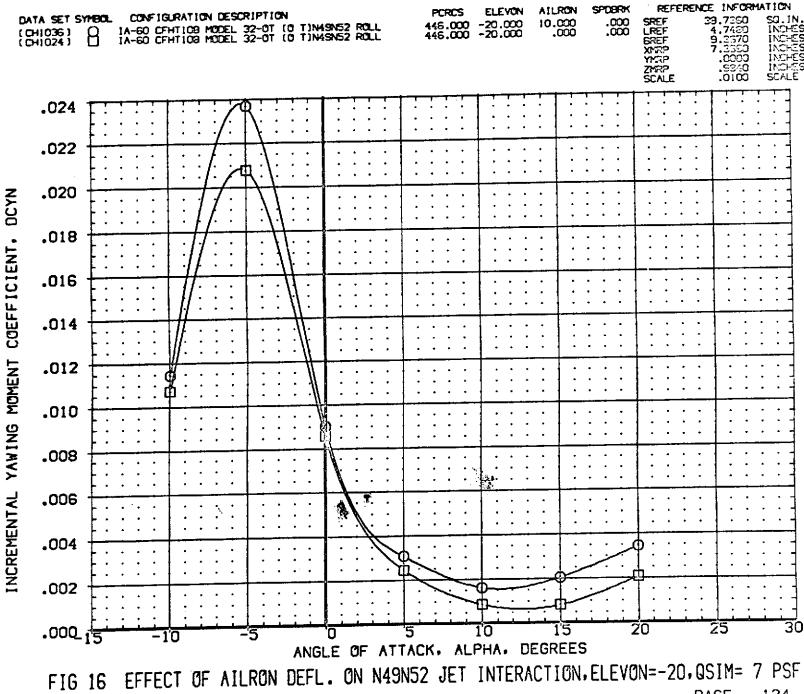




FIG 16 EFFECT OF AILRON DEFL. ON N49N52 JET INTERACTION, ELEVON=-20, QSIM= 7 PSF

(A)MACH = 10.33

PAGE 123



PAGE 124 (A)MACH = 10.33

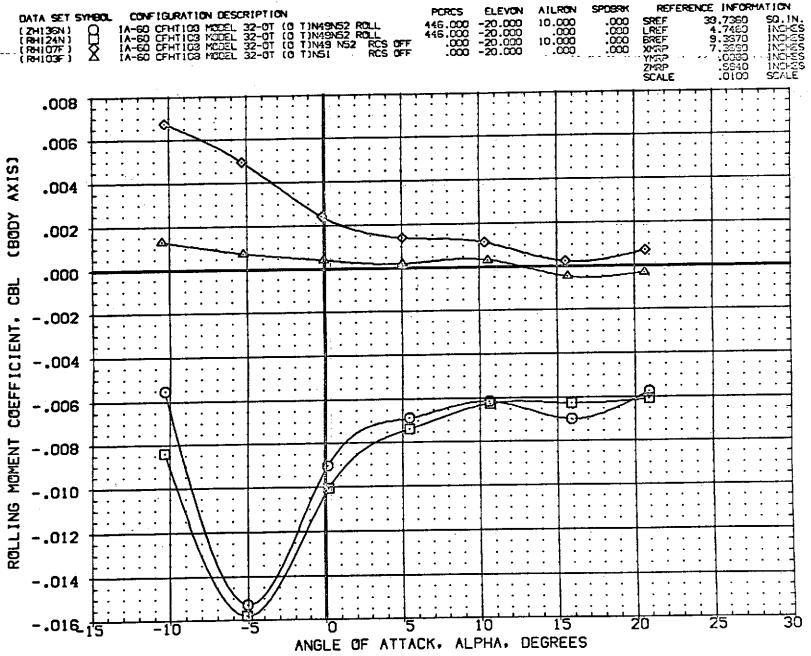


FIG 16 EFFECT OF AILRON DEFL. ON N49N52 JET INTERACTION, ELEVON=-20, QSIM= 7 PSF
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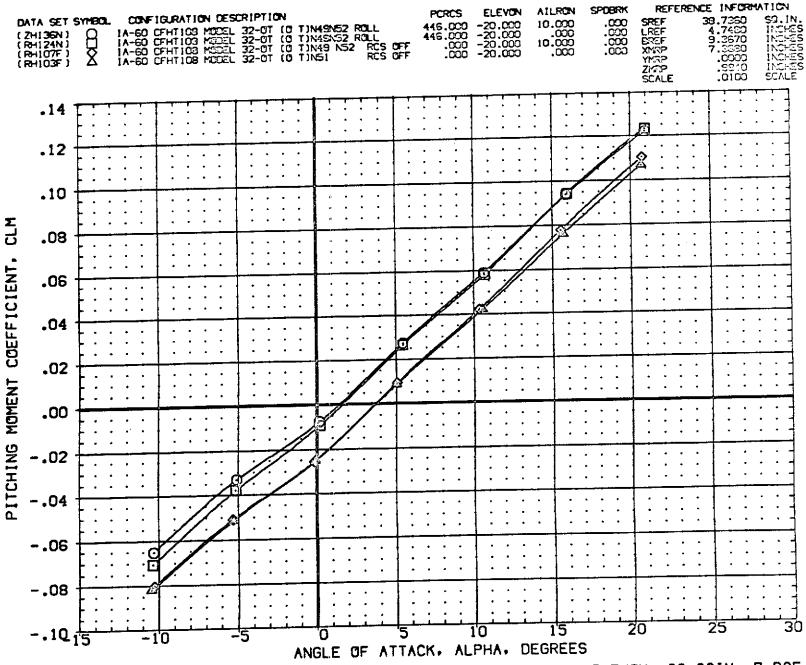
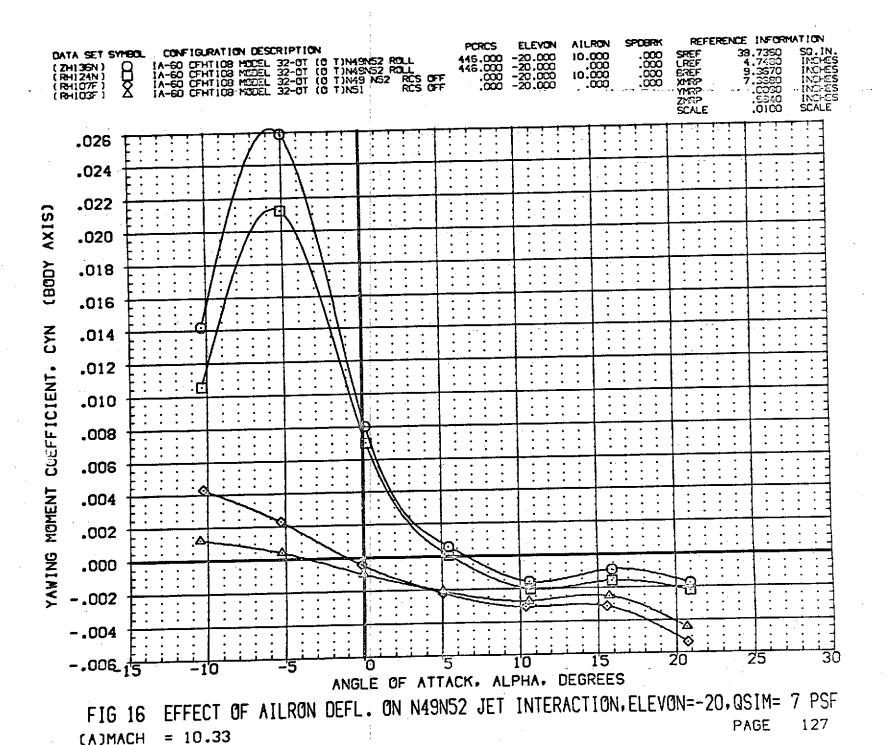


FIG 16 EFFECT OF AILRON DEFL. ON N49N52 JET INTERACTION, ELEVON=-20, QSIM= 7 PSF

(A)MACH = 10.33



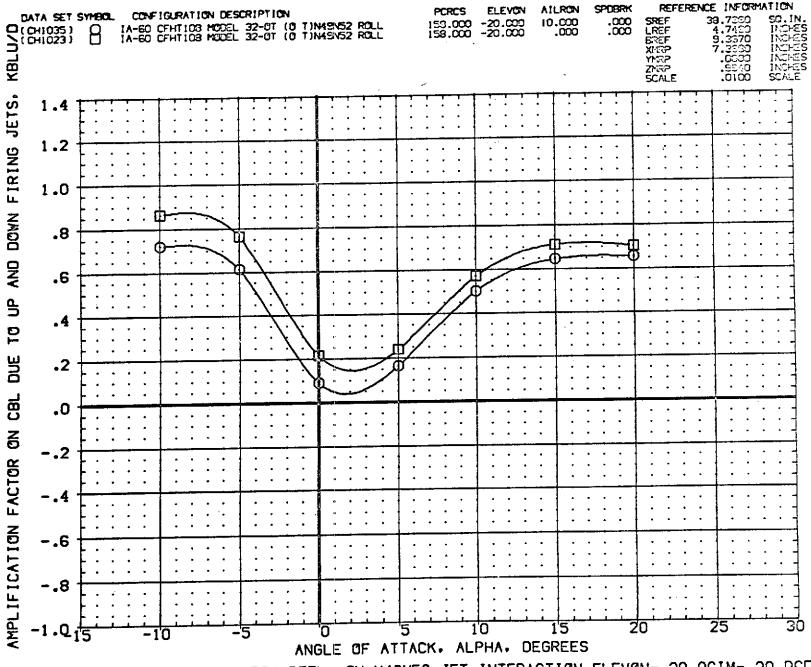
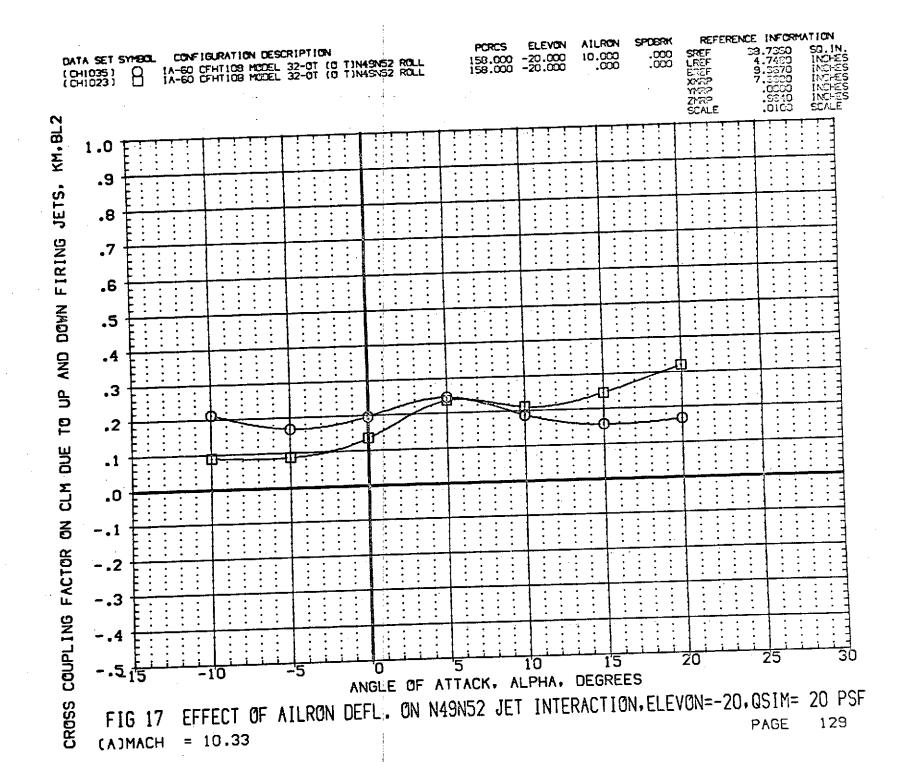
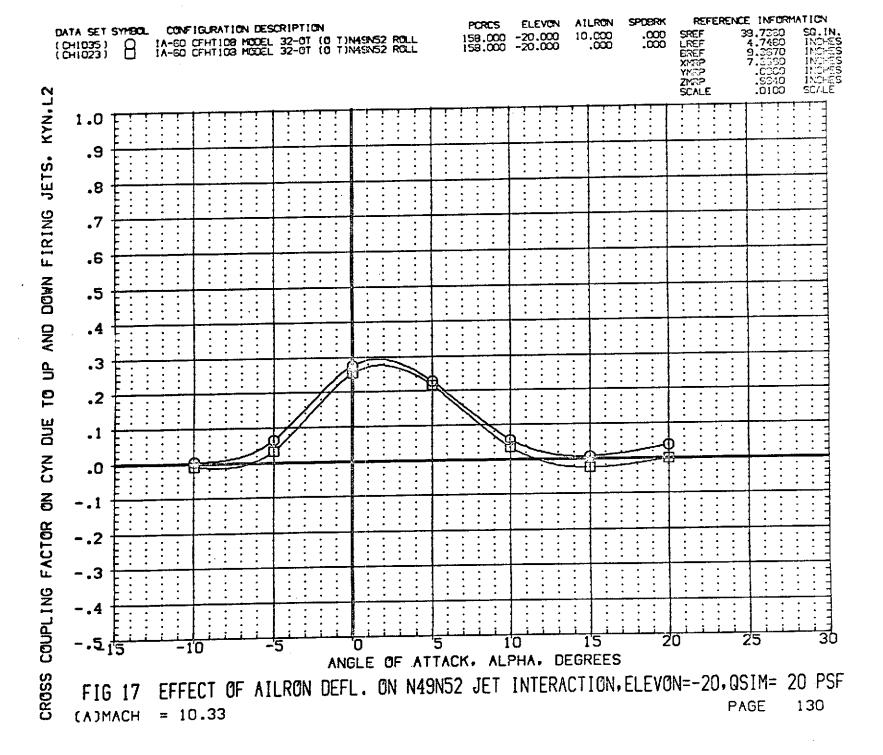


FIG 17 EFFECT OF AILRON DEFL. ON N49N52 JET INTERACTION, ELEVON=-20, QSIM= 20 PSF

(A)MACH = 10.33





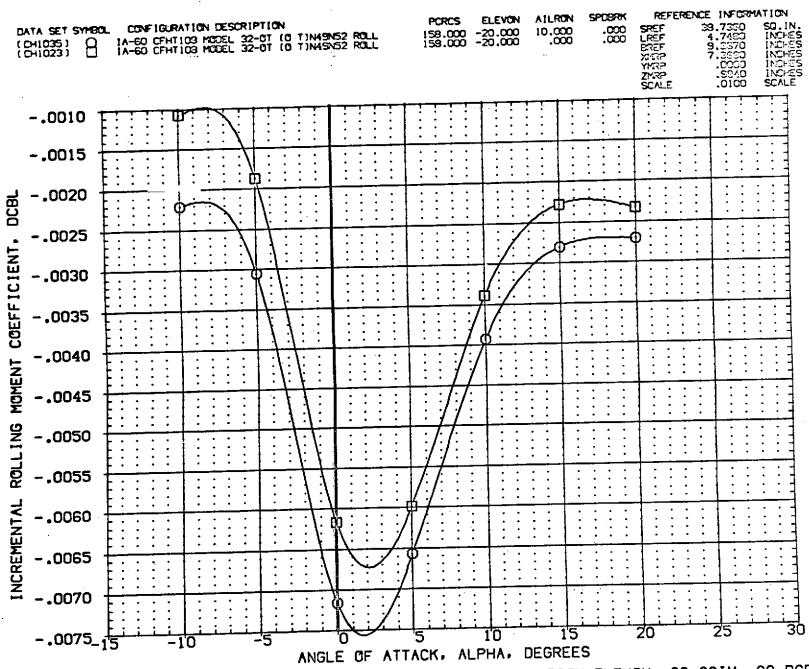


FIG 17 EFFECT OF AILRON DEFL. ON N49N52 JET INTERACTION, ELEVON=-20, QSIM= 20 PSF

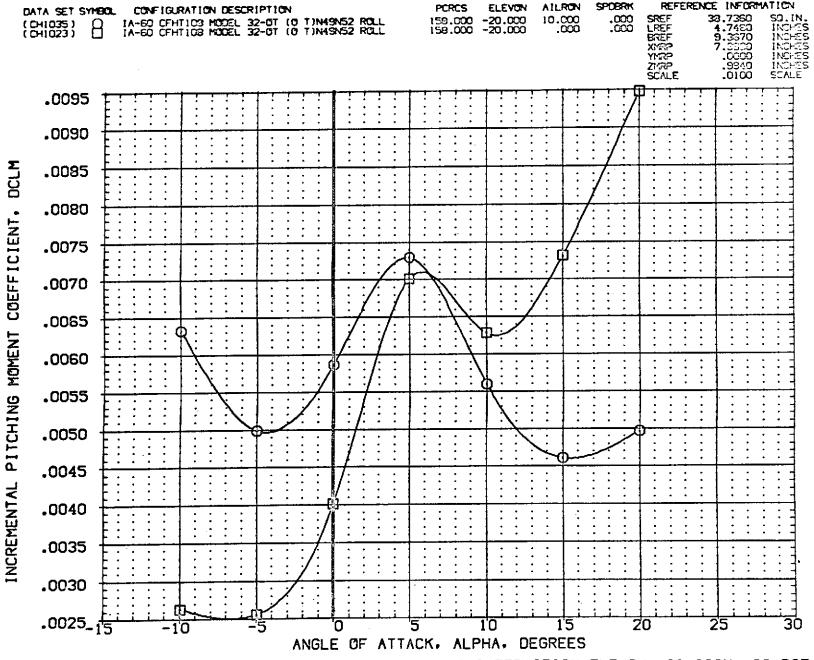
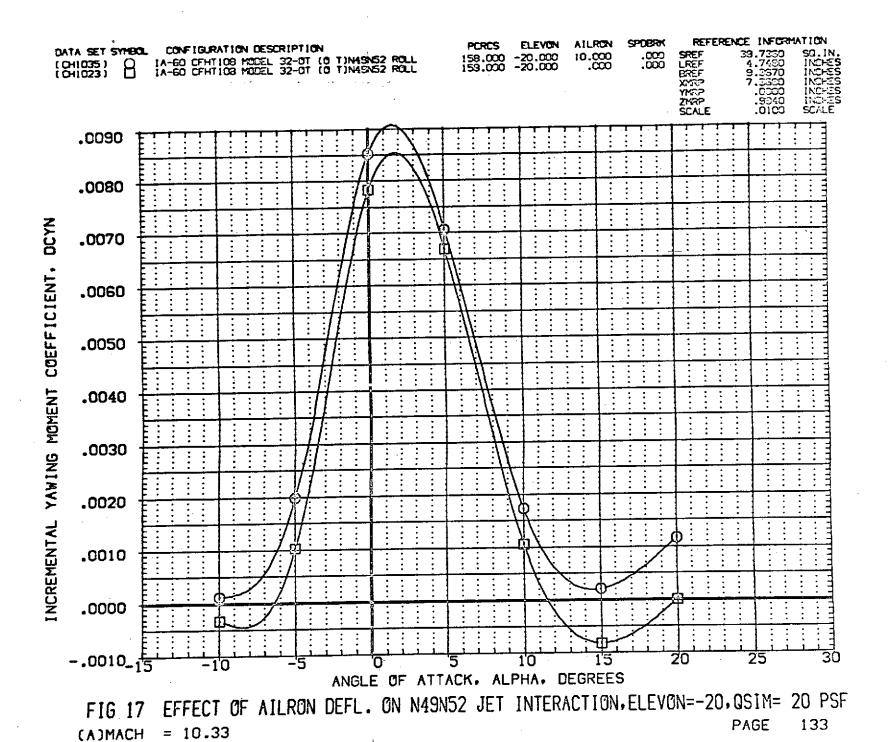


FIG 17 EFFECT OF AILRON DEFL. ON N49N52 JET INTERACTION, ELEVON=-20, QSIM= 20 PSF
(A)MACH = 10.33

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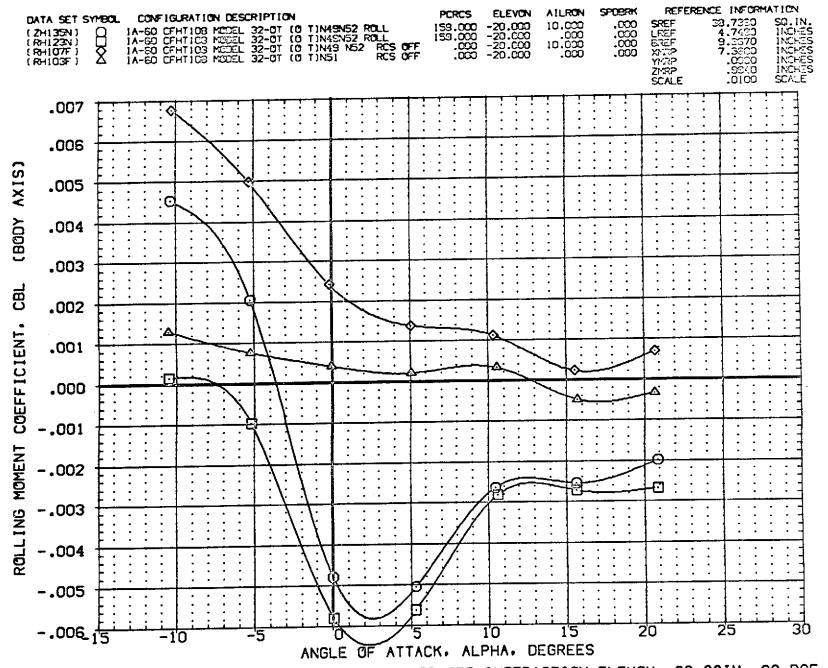


FIG 17 EFFECT OF AILRON DEFL. ON N49N52 JET INTERACTION, ELEVON=-20, QSIM= 20 PSF
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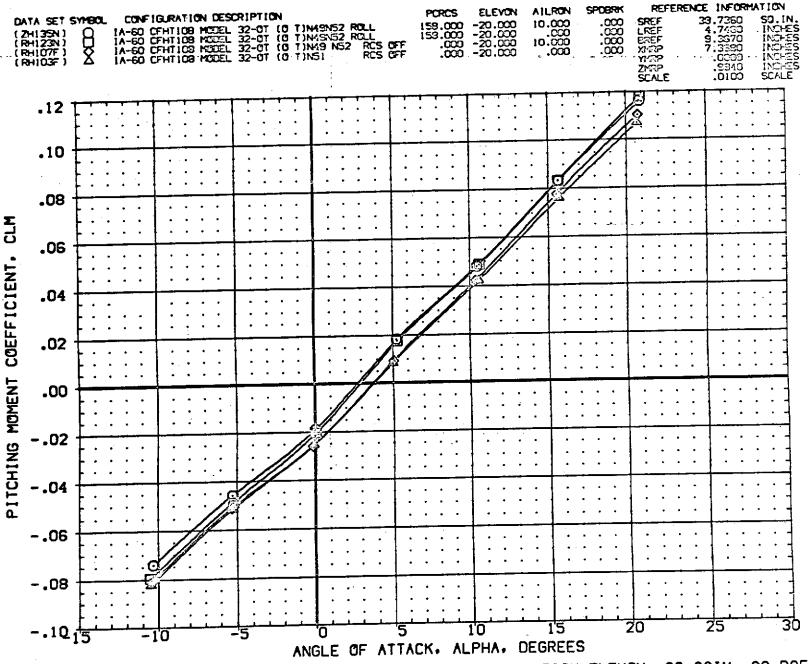


FIG 17 EFFECT OF AILRON DEFL. ON N49N52 JET INTERACTION. ELEVON = -20. QSIM = 20 PSF

(A)MACH = 10.33

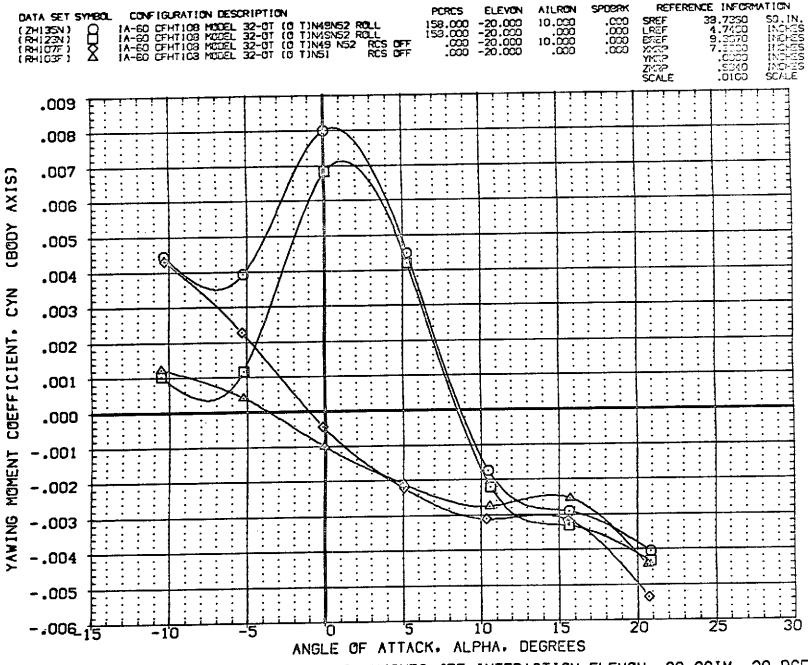


FIG 17 EFFECT OF AILRON DEFL. ON N49N52 JET INTERACTION, ELEVON=-20, QSIM= 20 PSF
(A)MACH = 10.33

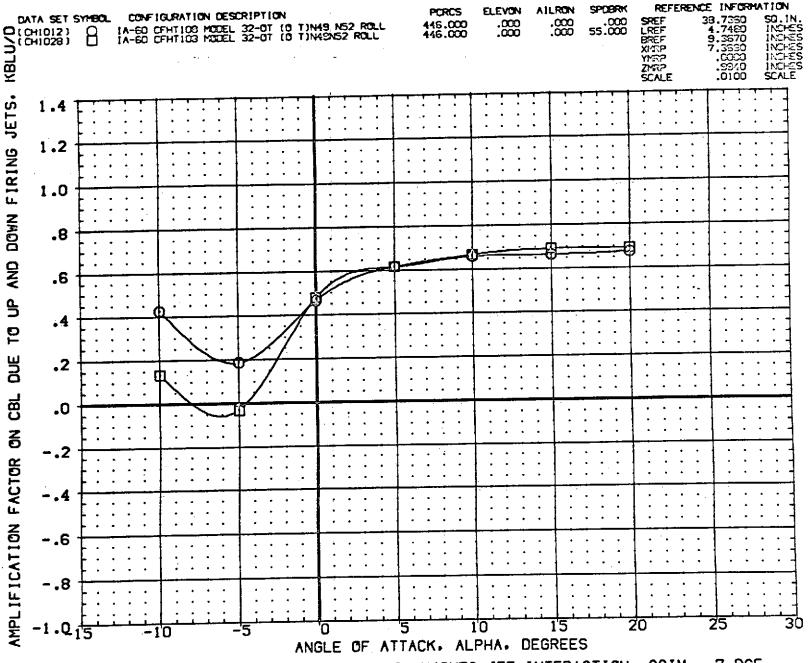
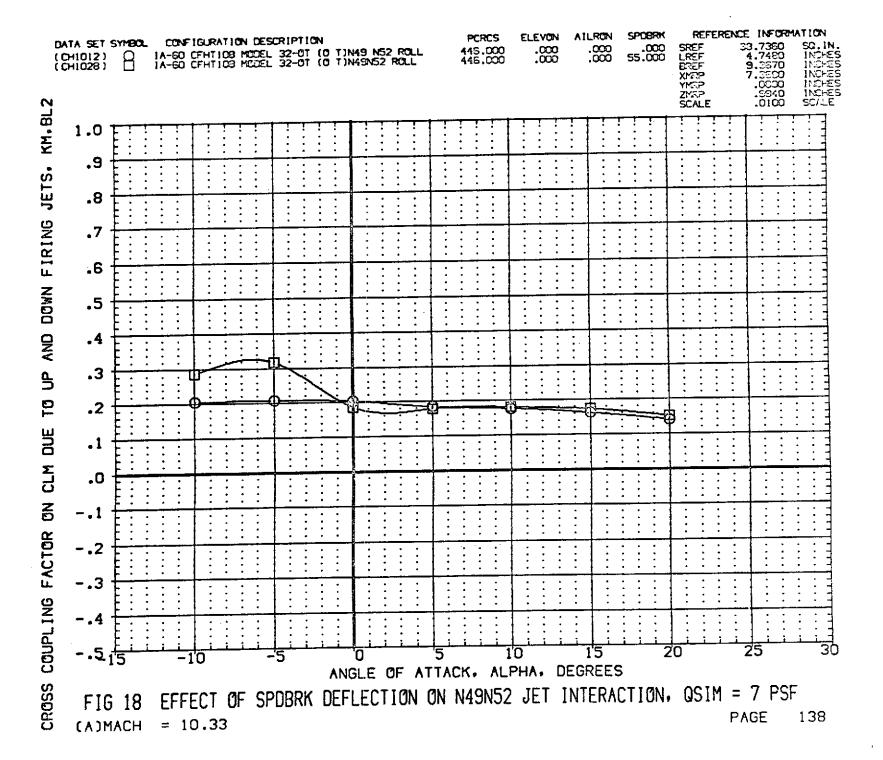
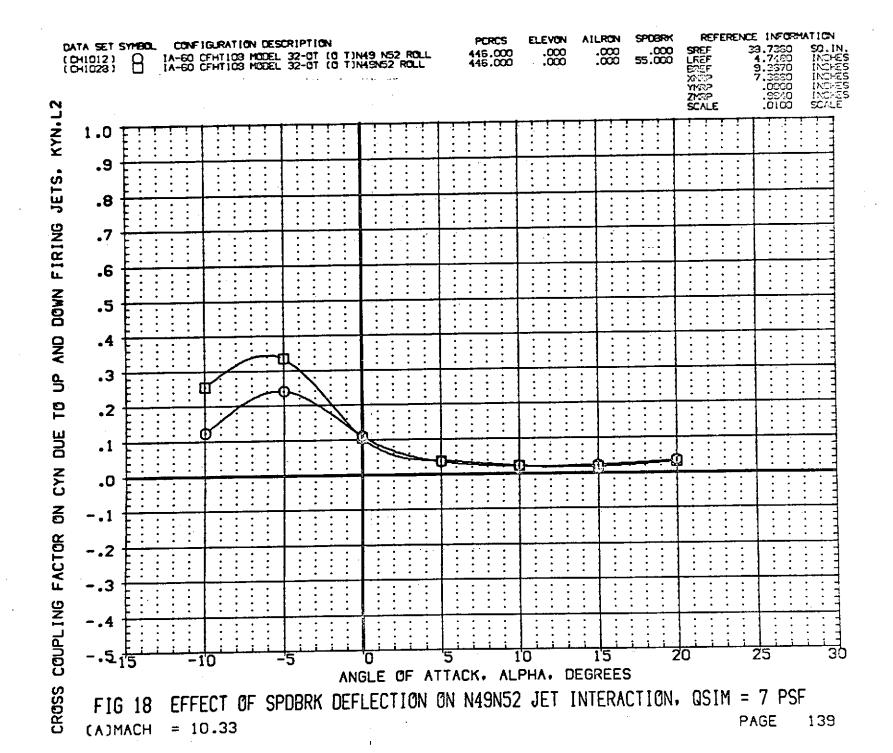


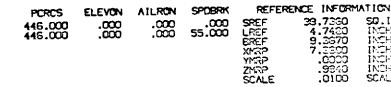
FIG 18 EFFECT OF SPDBRK DEFLECTION ON N49N52 JET INTERACTION, QSIM = 7 PSF.

(A)MACH = 10.33









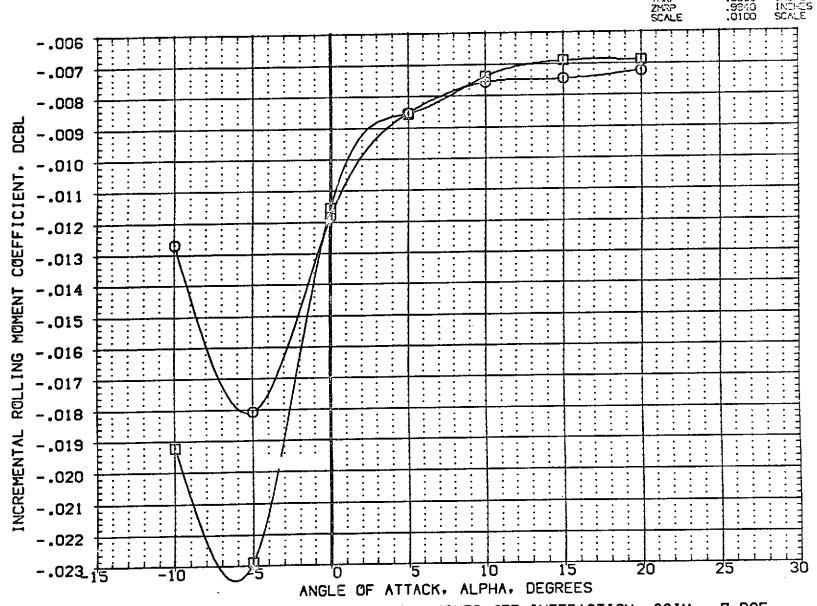
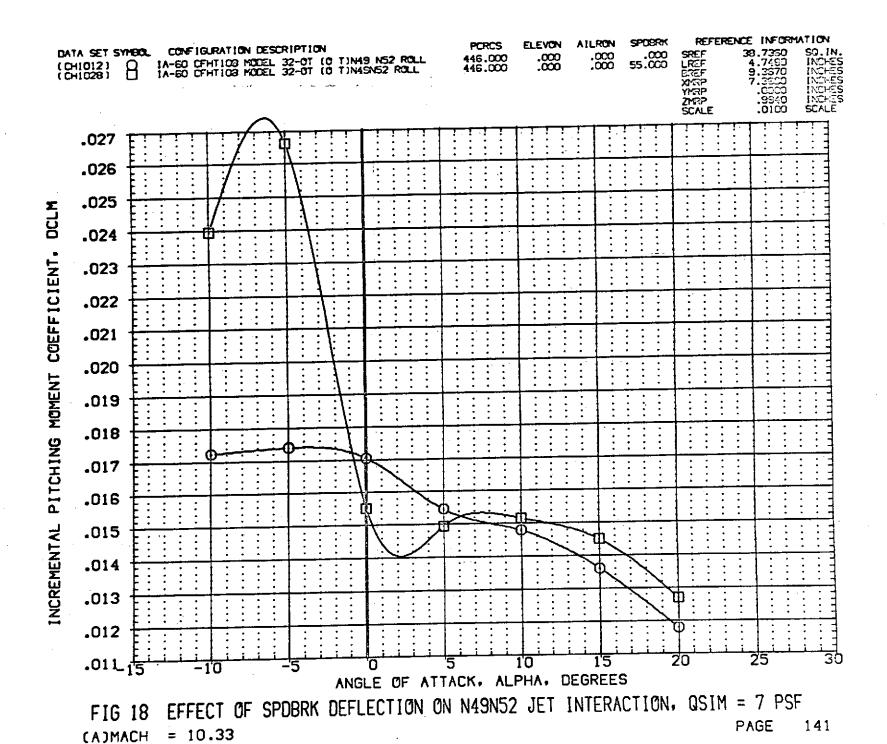


FIG 18 EFFECT OF SPOBRK DEFLECTION ON N49N52 JET INTERACTION, QSIM = 7 PSF

(A)MACH = 10.33

PAGE 140



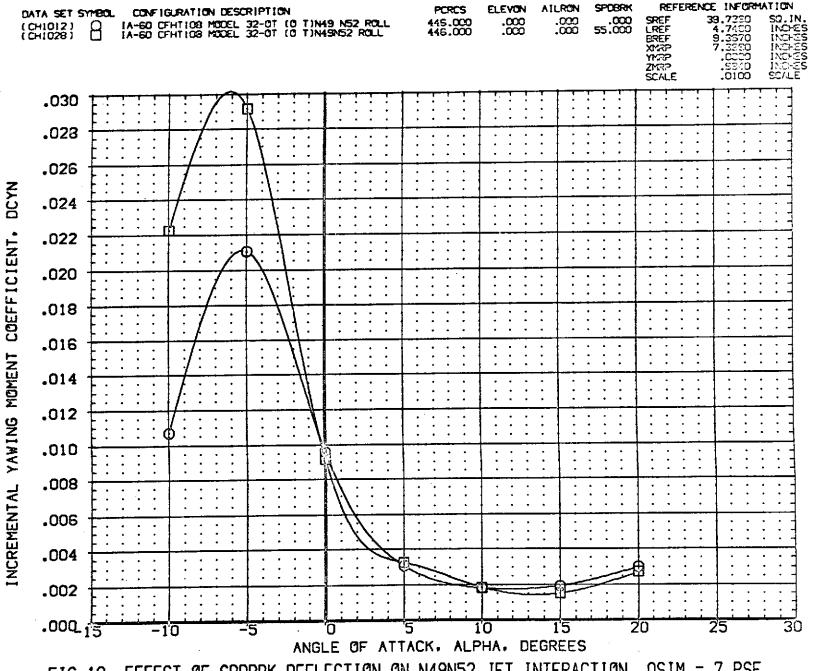
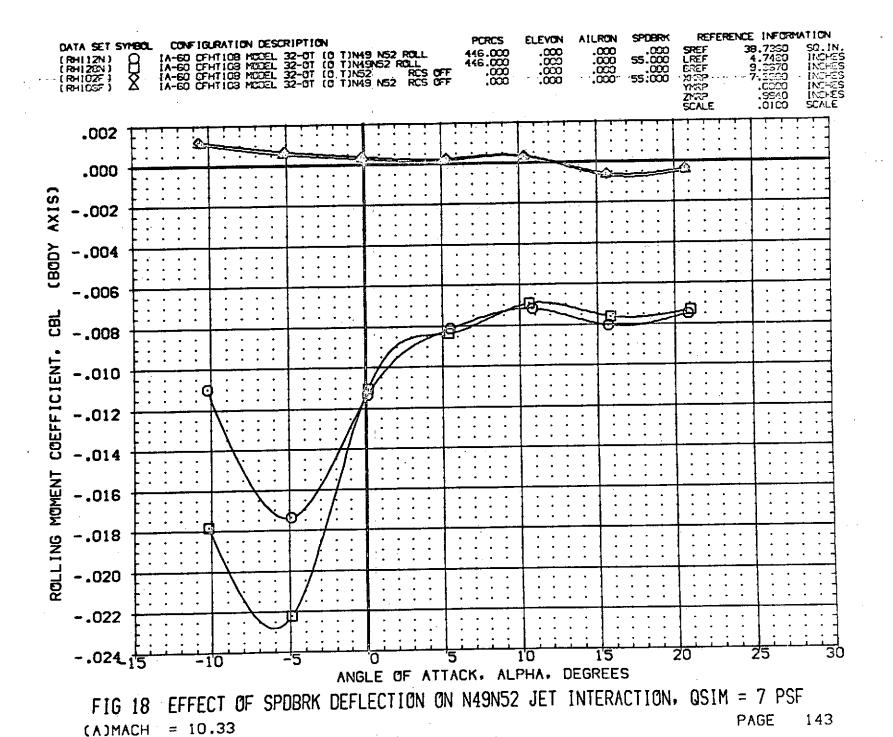


FIG 18 EFFECT OF SPDBRK DEFLECTION ON N49N52 JET INTERACTION, QSIM = 7 PSF

(A)MACH = 10.33

PAGE 142



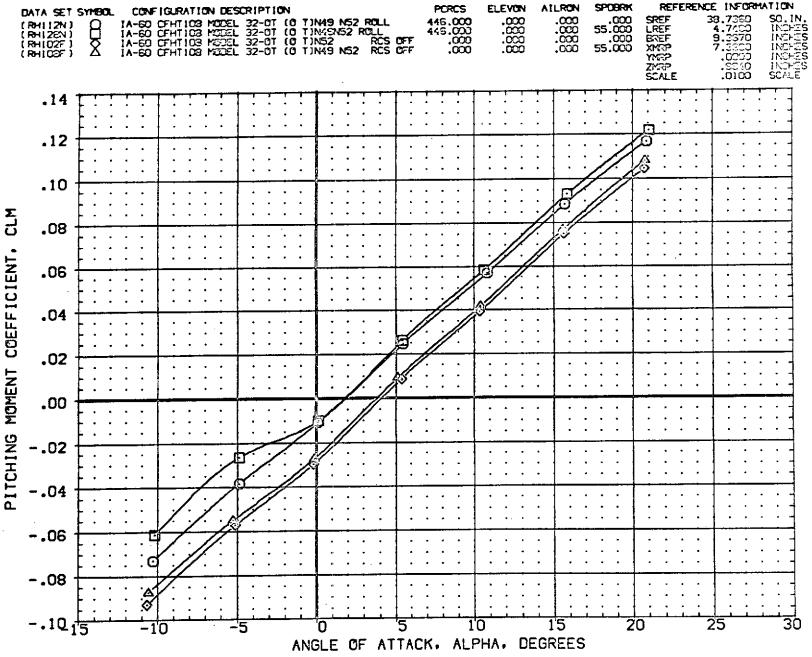
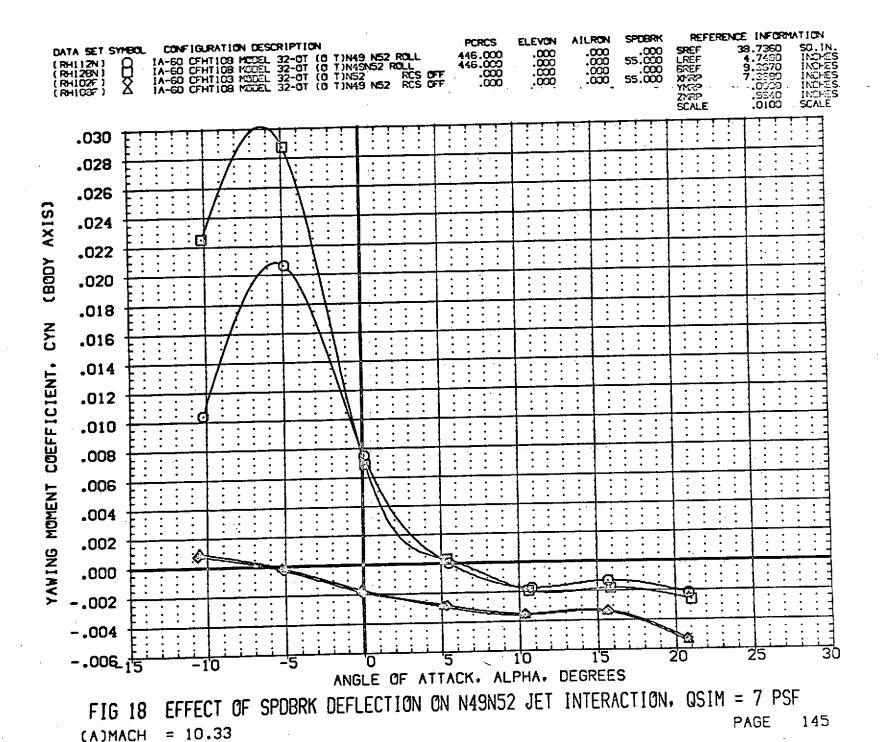


FIG 18 EFFECT OF SPDBRK DEFLECTION ON N49N52 JET INTERACTION, QSIM = 7 PSF

(A)MACH = 10.33

PAGE 144



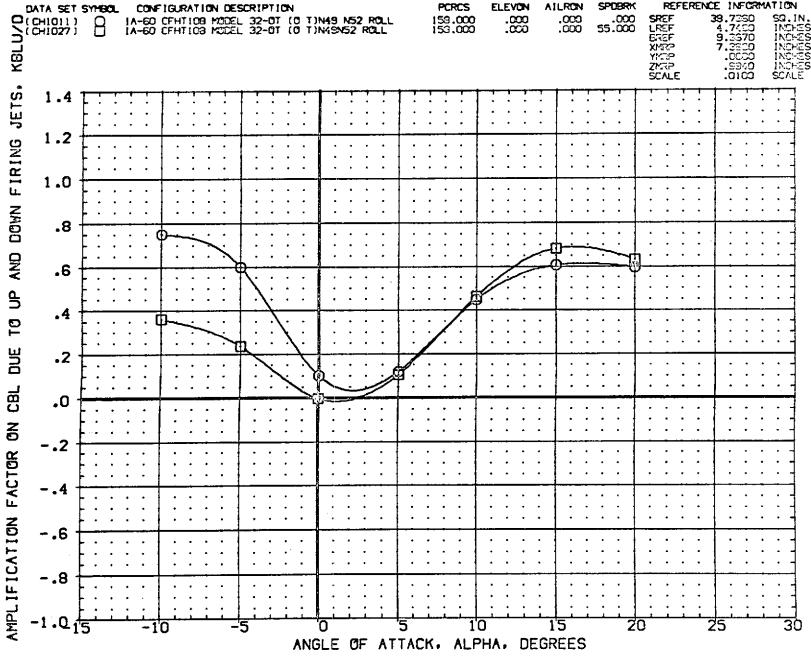
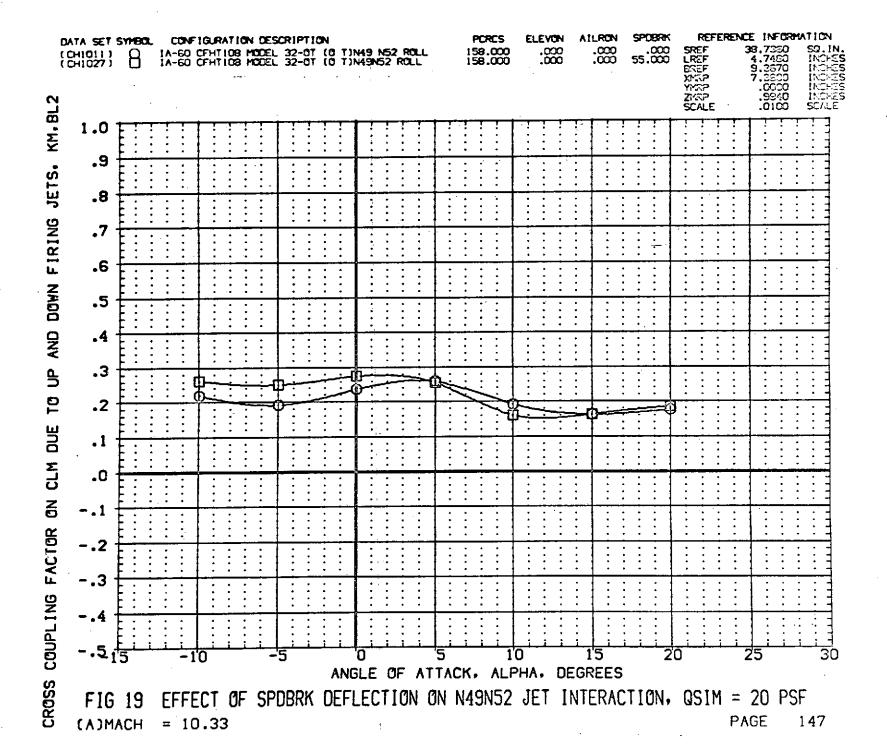
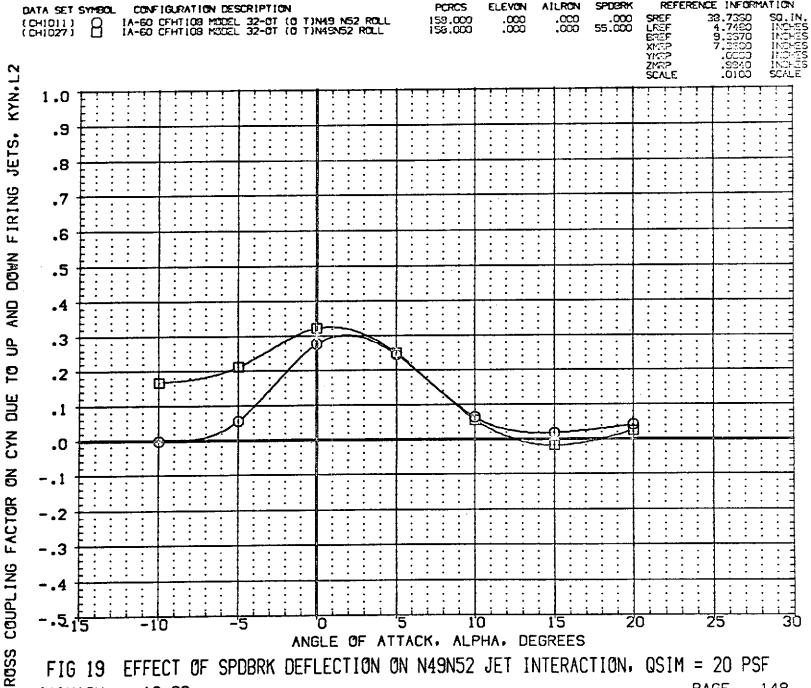


FIG 19 EFFECT OF SPDBRK DEFLECTION ON N49N52 JET INTERACTION, QSIM = 20 PSF

(A)MACH = 10.33

PAGE 146





REFERENCE INFORMATION

PAGE 148 (A)MACH = 10.33

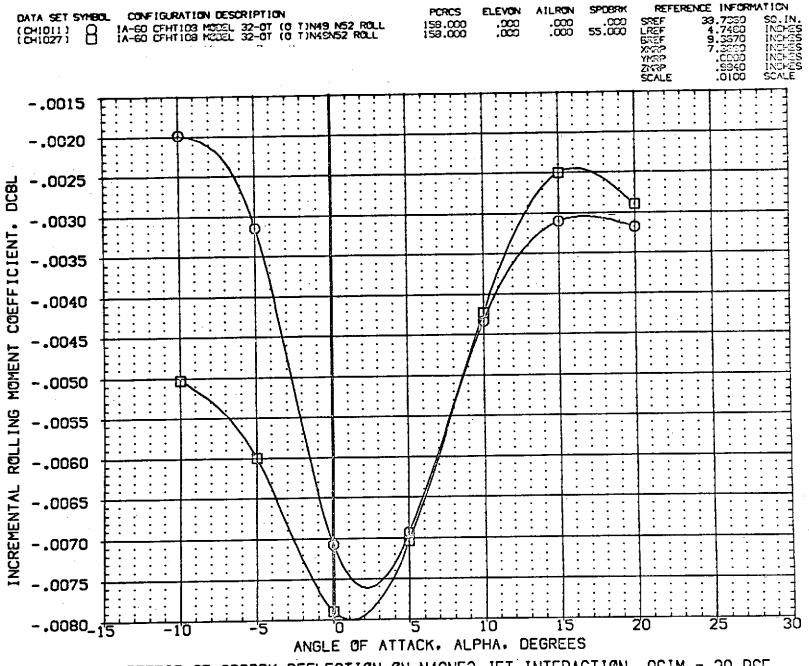
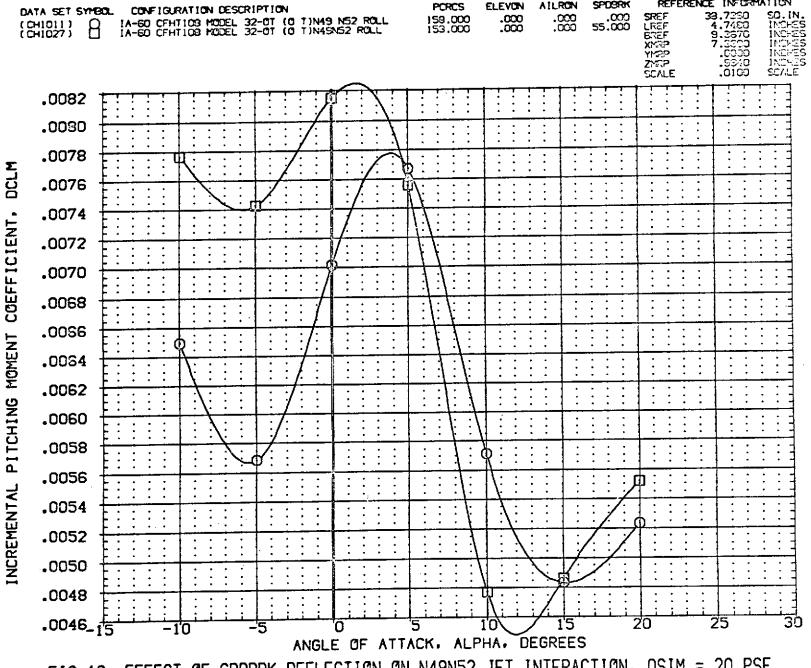


FIG 19 EFFECT OF SPDBRK DEFLECTION ON N49N52 JET INTERACTION, QSIM = 20 PSF
(A)MACH = 10.33
PAGE 149



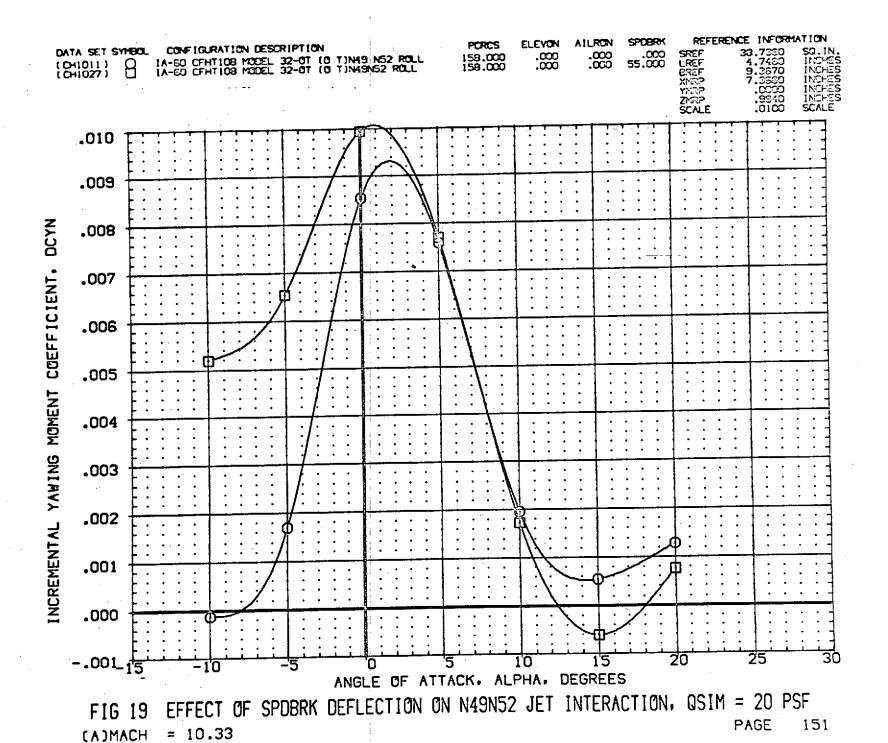
REFERENCE INFORMATION

SPDBRK

ELEVON

AILRON

EFFECT OF SPOBRK DEFLECTION ON N49N52 JET INTERACTION, QSIM = 20 PSF PAGE 150 (A)MACH = 10.33



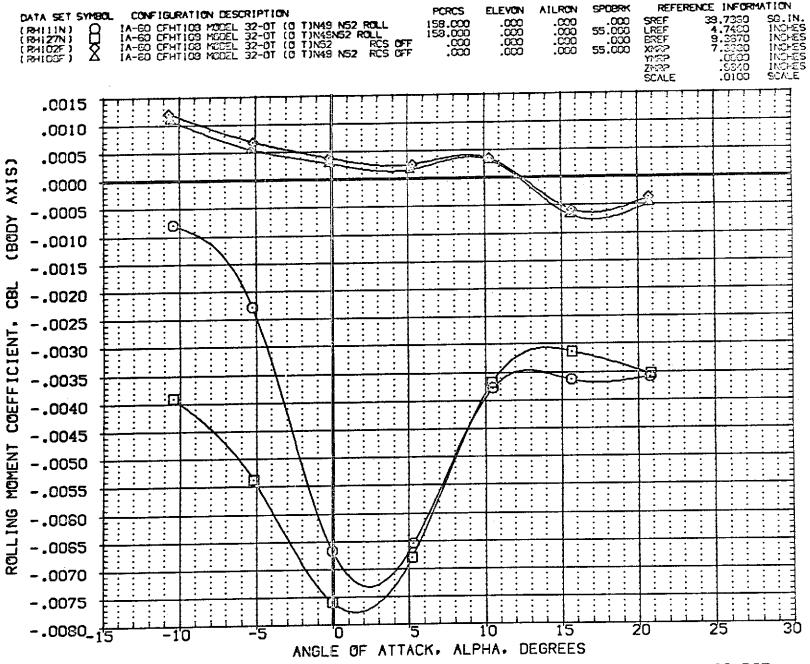


FIG 19 EFFECT OF SPDBRK DEFLECTION ON N49N52 JET INTERACTION, QSIM = 20 PSF
(A)MACH = 10.33

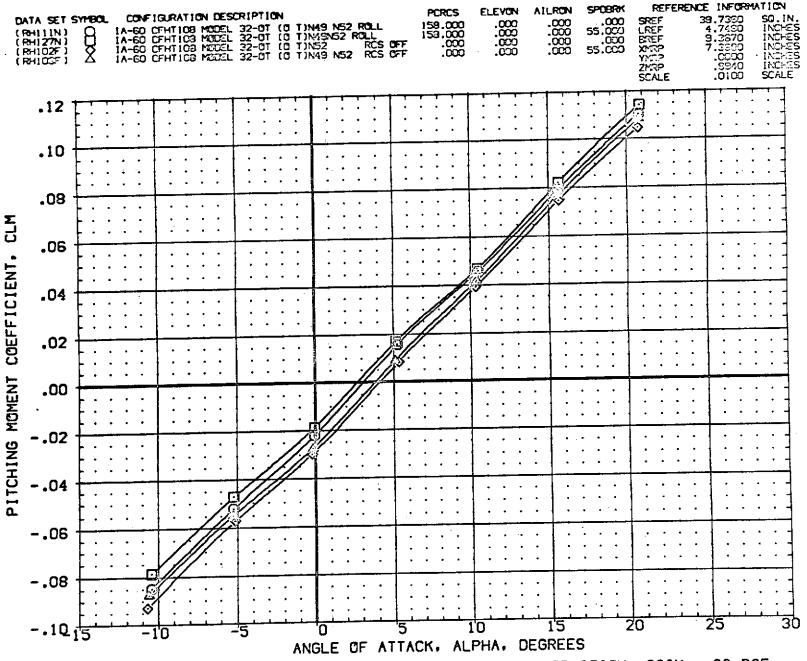


FIG 19 EFFECT OF SPDBRK DEFLECTION ON N49N52 JET INTERACTION. QSIM = 20 PSF

(A)MACH = 10.33

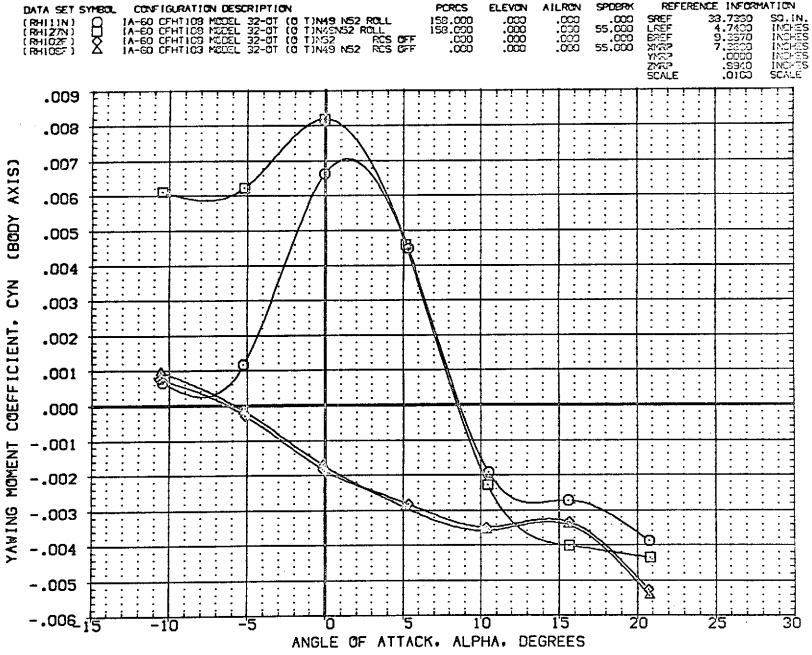
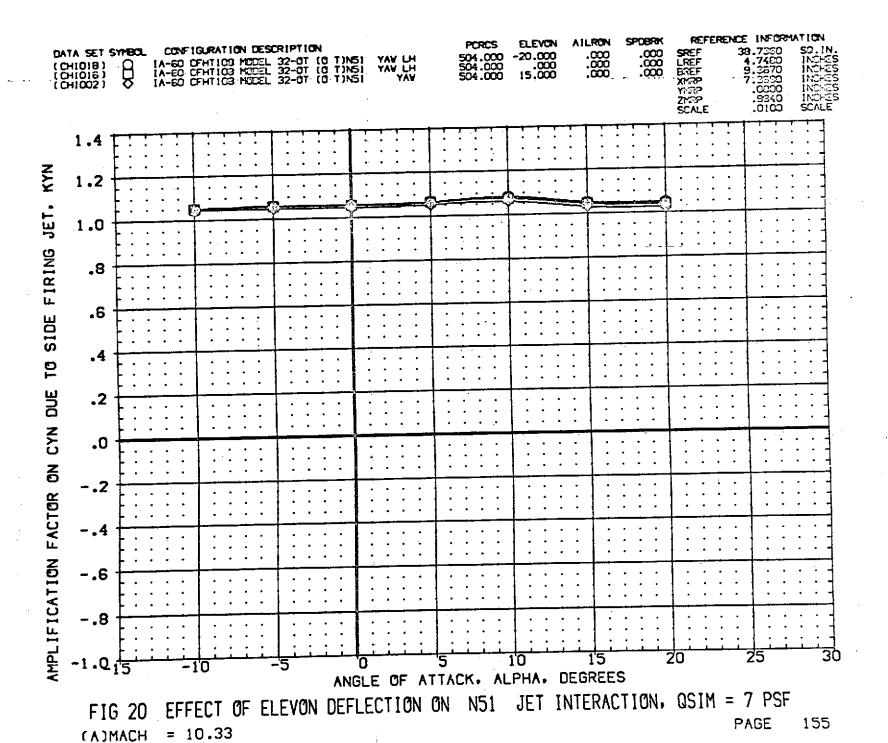


FIG 19 EFFECT OF SPDBRK DEFLECTION ON N49N52 JET INTERACTION, QSIM = 20 PSF

(A)MACH = 10.33

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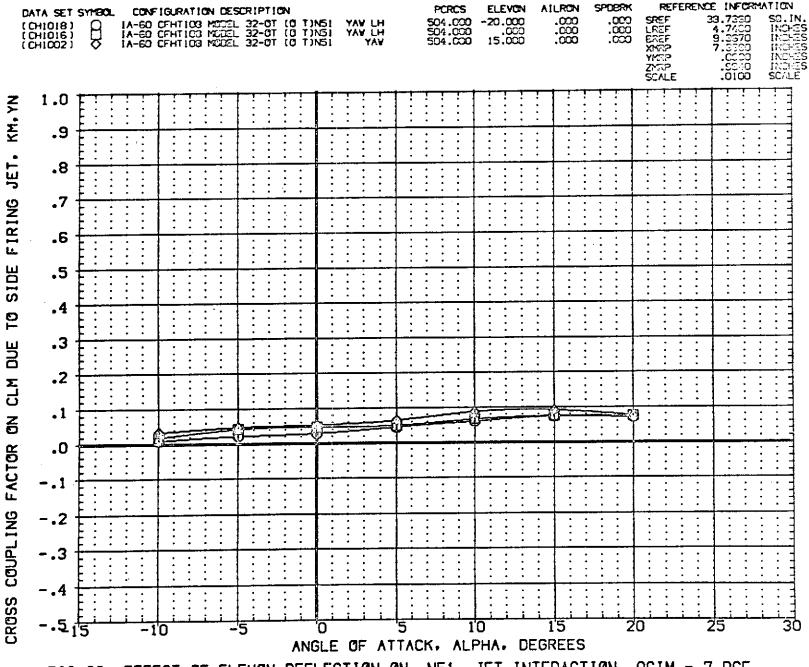
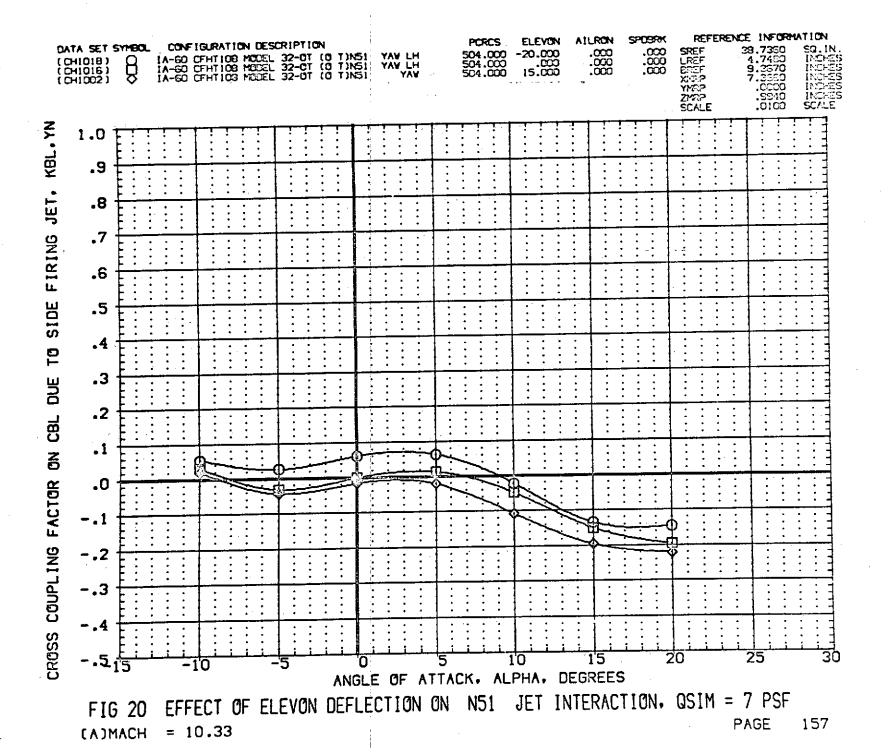


FIG 20 EFFECT OF ELEVON DEFLECTION ON N51 JET INTERACTION, QSIM = 7 PSF

(A)MACH = 10.33

PAGE 156



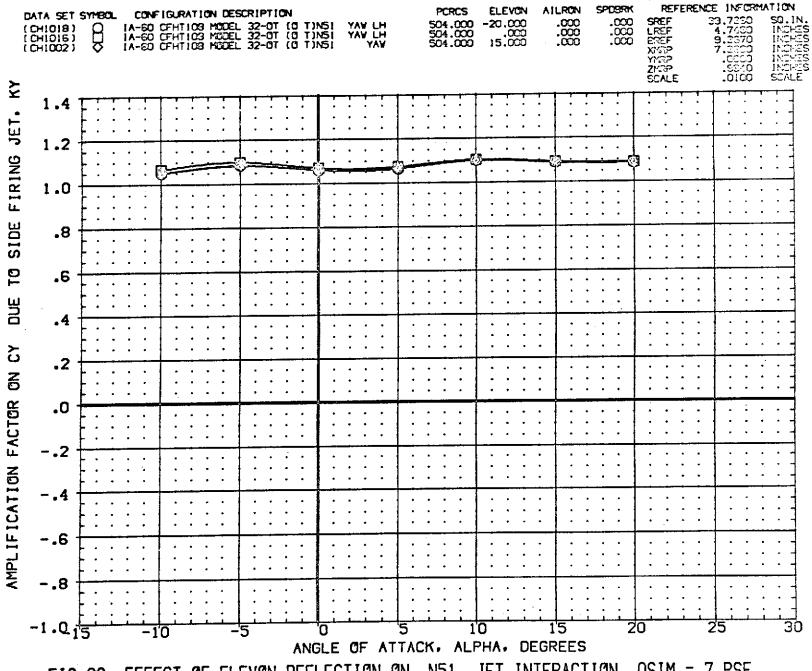
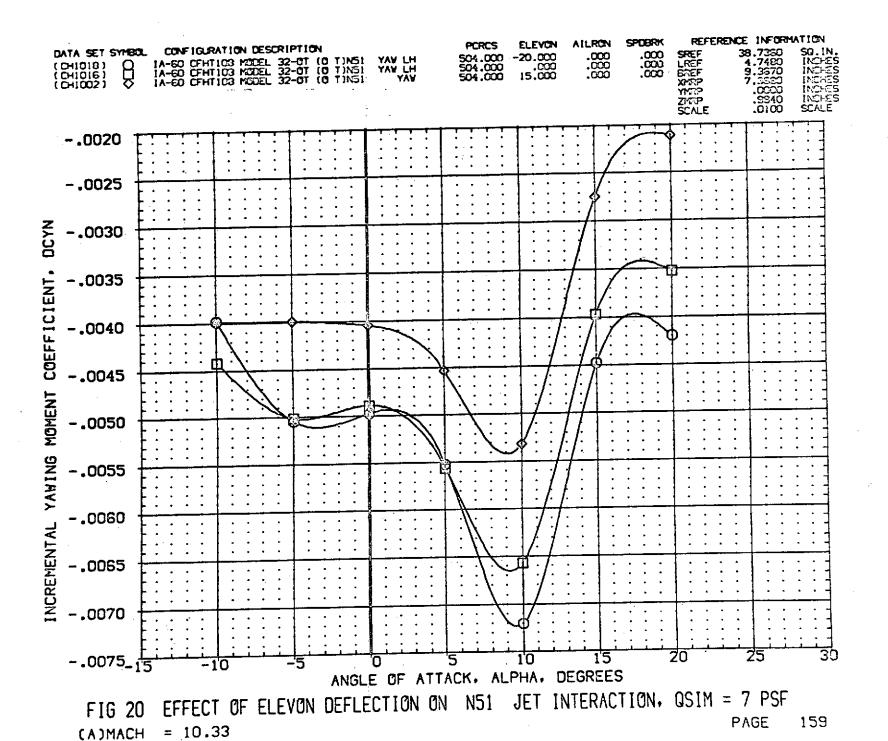


FIG 20 EFFECT OF ELEVON DEFLECTION ON N51 JET INTERACTION, QSIM = 7 PSF

(A)MACH = 10.33

PAGE 158



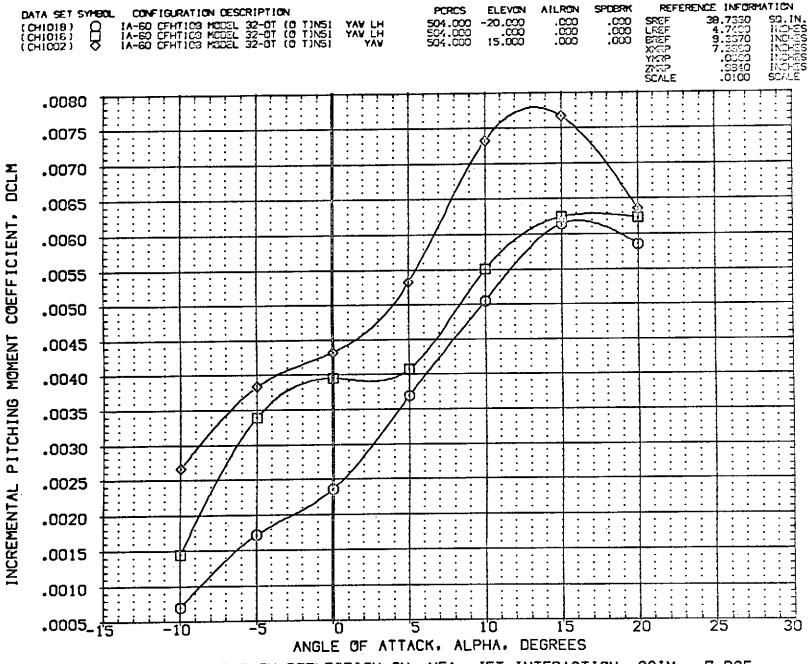
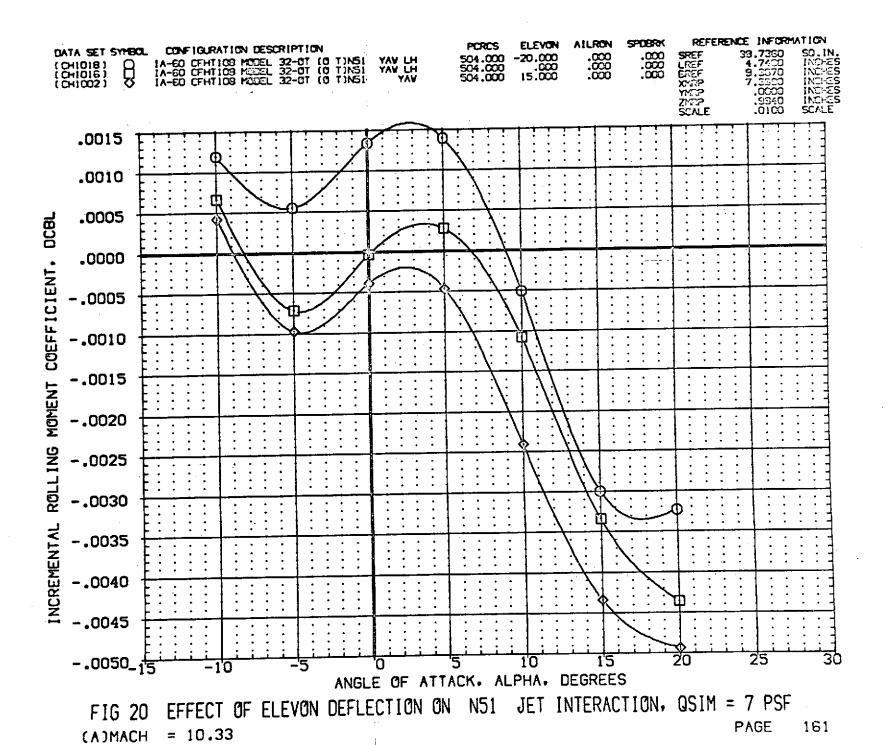


FIG 20 EFFECT OF ELEVON DEFLECTION ON N51 JET INTERACTION, QSIM = 7 PSF

(A)MACH = 10.33

PAGE 160



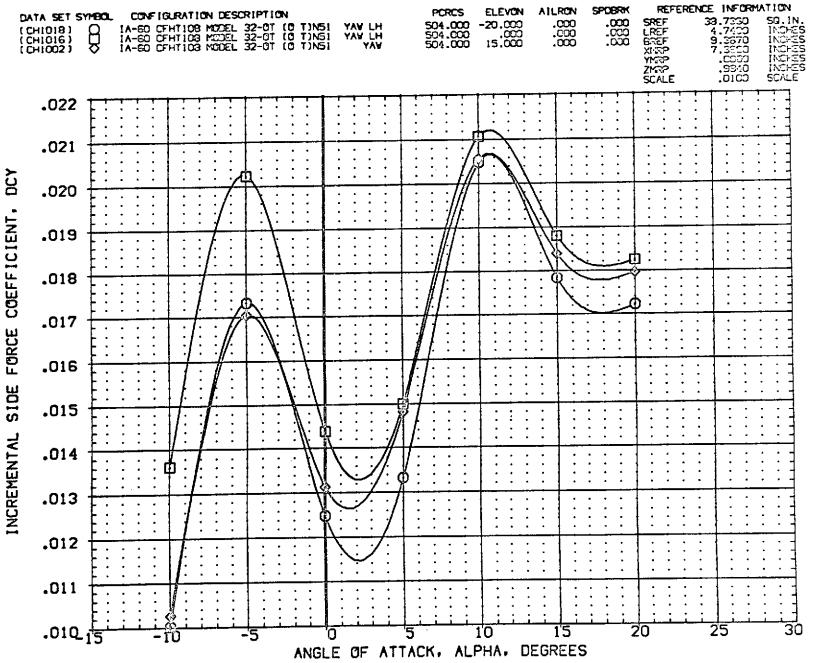


FIG 20 EFFECT OF ELEVON DEFLECTION ON N51 JET INTERACTION, QSIM = 7 PSF

(A)MACH = 10.33

PAGE 162

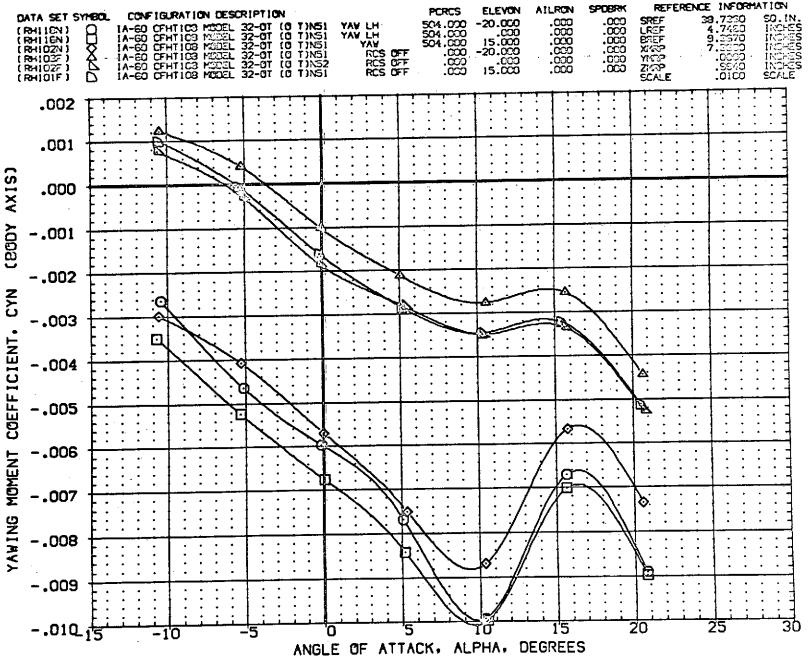


FIG 20 EFFECT OF ELEVON DEFLECTION ON N51 JET INTERACTION, QSIM = 7 PSF

(A)MACH = 10.33

PAGE 163

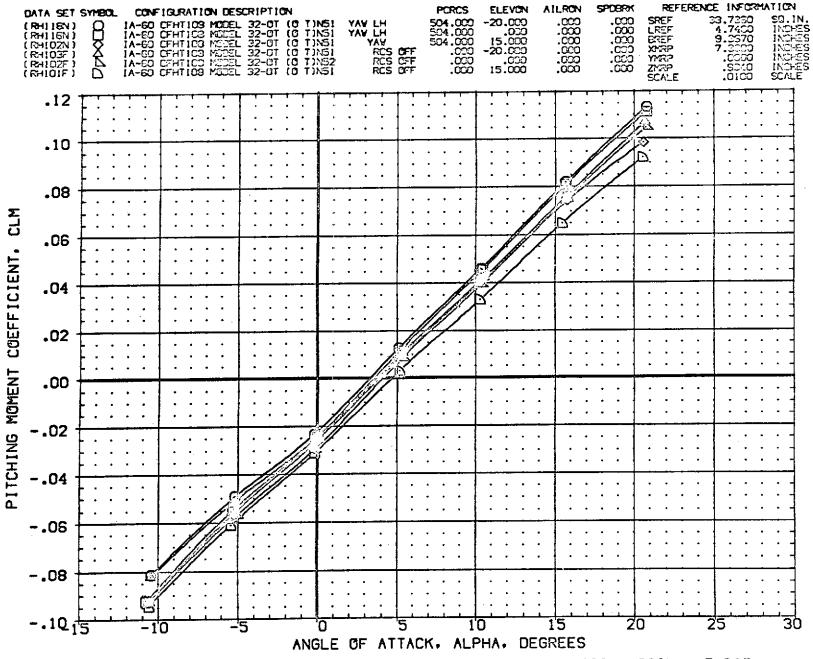


FIG 20 EFFECT OF ELEVON DEFLECTION ON N51 JET INTERACTION, QSIM = 7 PSF

(A)MACH = 10.33

PAGE 164

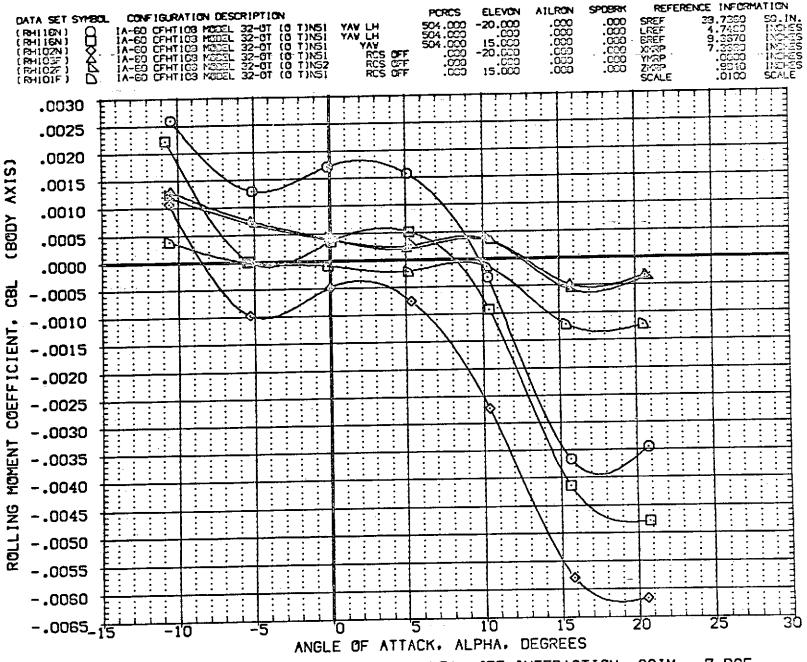


FIG 20 EFFECT OF ELEVON DEFLECTION ON N51 JET INTERACTION, QSIM = 7 PSF

(A)MACH = 10.33

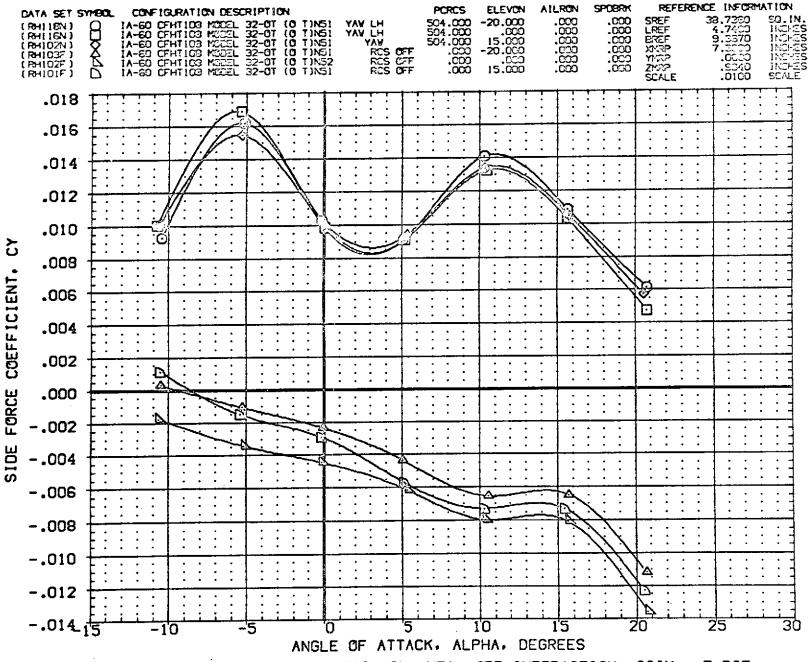
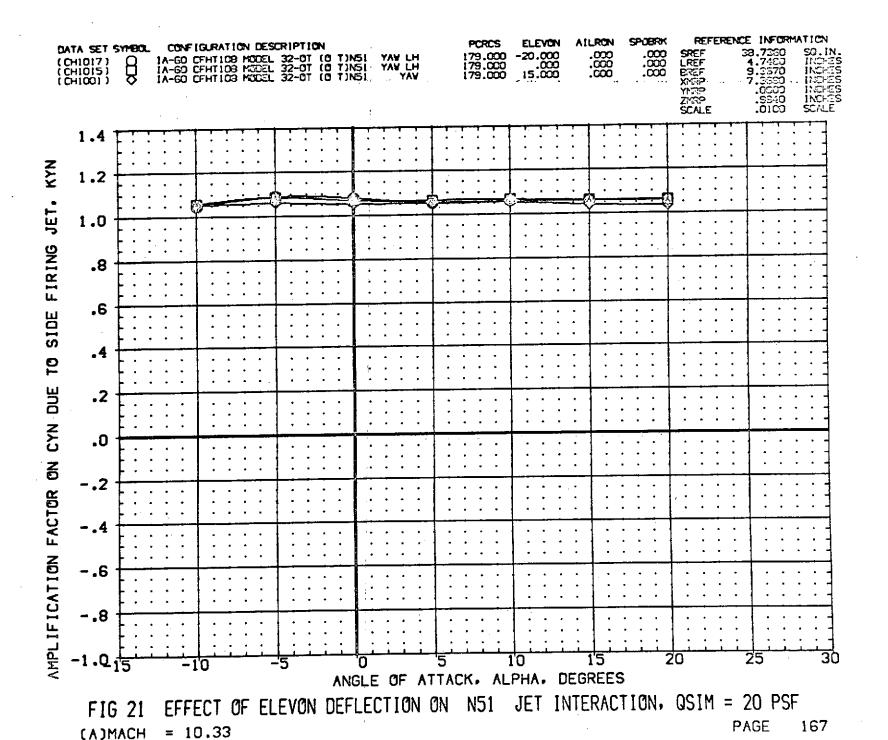


FIG 20 EFFECT OF ELEVON DEFLECTION ON N51 JET INTERACTION, QSIM = 7 PSF

(A)MACH = 10.33

PAGE 166



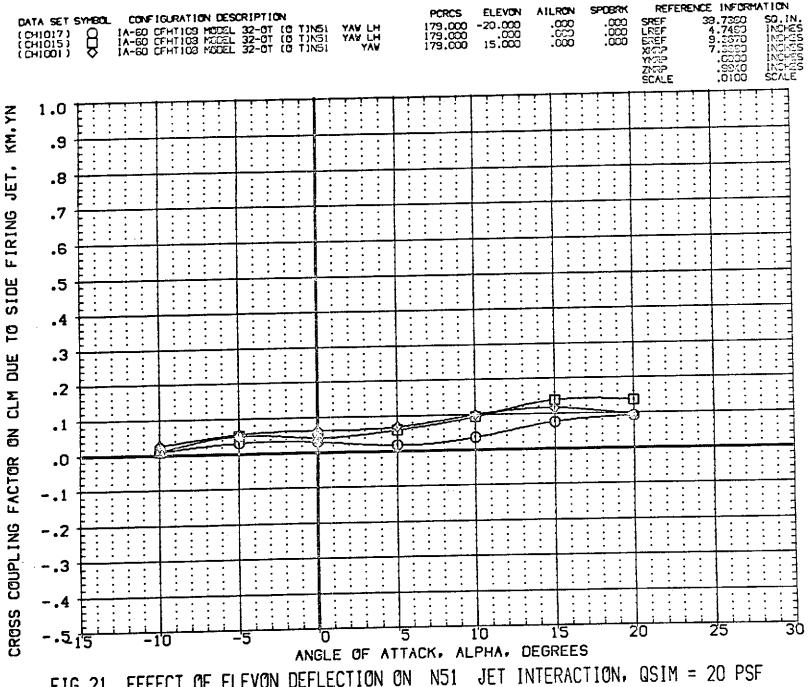


FIG 21 EFFECT OF ELEVON DEFLECTION ON N51 JET INTERACTION, QSIM = 20 PSF

[A)MACH = 10.33

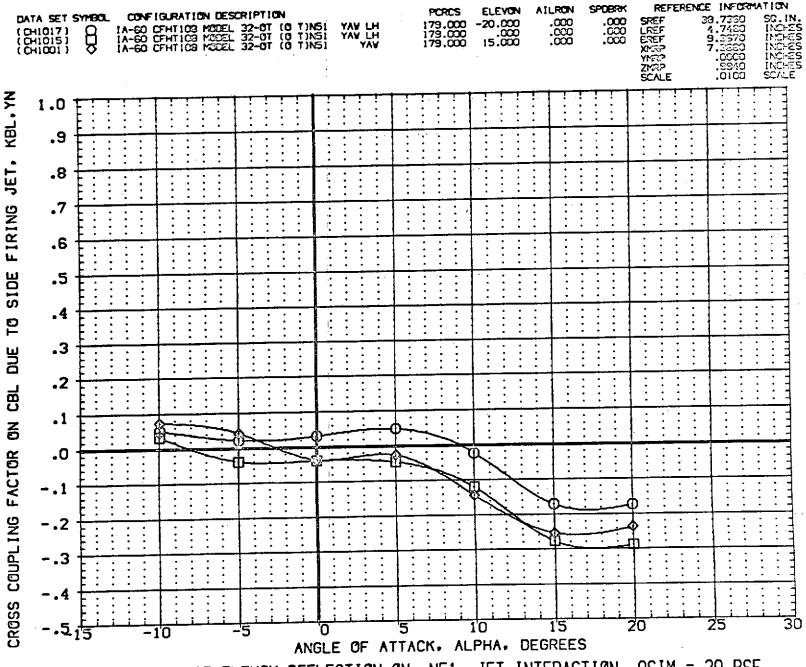


FIG 21 EFFECT OF ELEVON DEFLECTION ON N51 JET INTERACTION, QSIM = 20 PSF

(A)MACH = 10.33

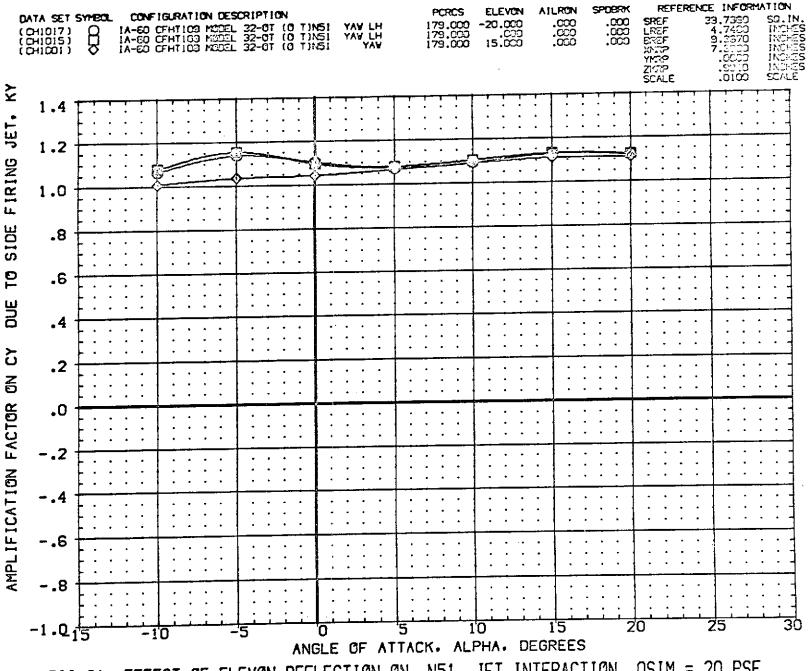
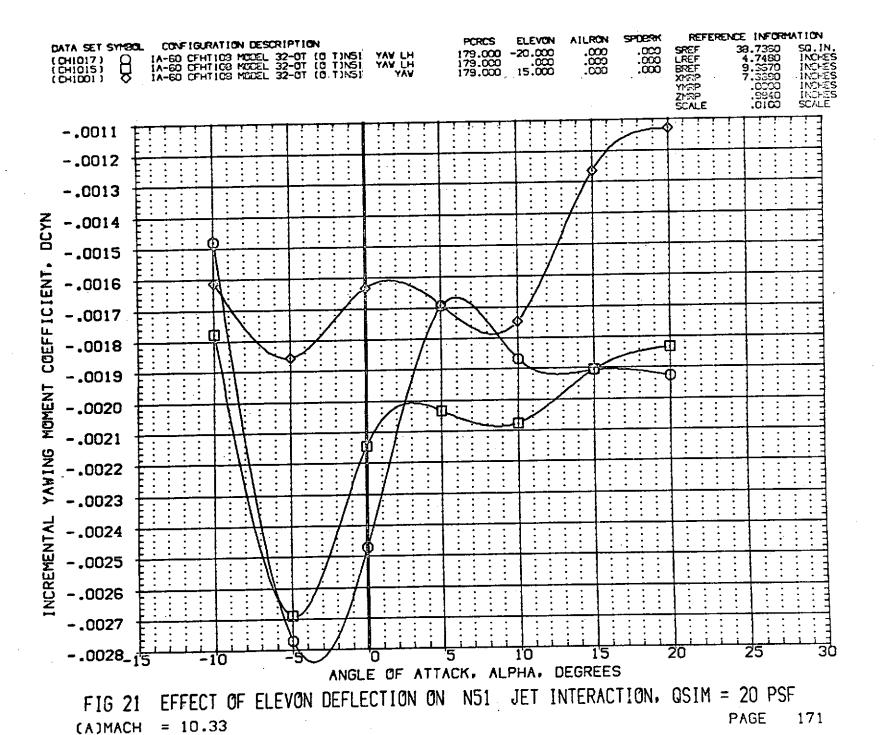


FIG 21 EFFECT OF ELEVON DEFLECTION ON N51 JET INTERACTION, QSIM = 20 PSF

(A)MACH = 10.33

PAGE 170



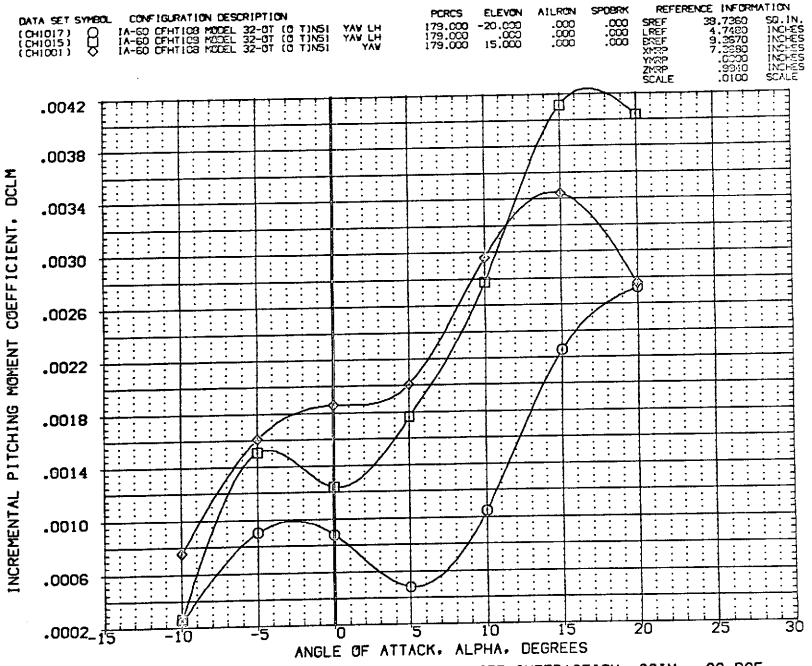
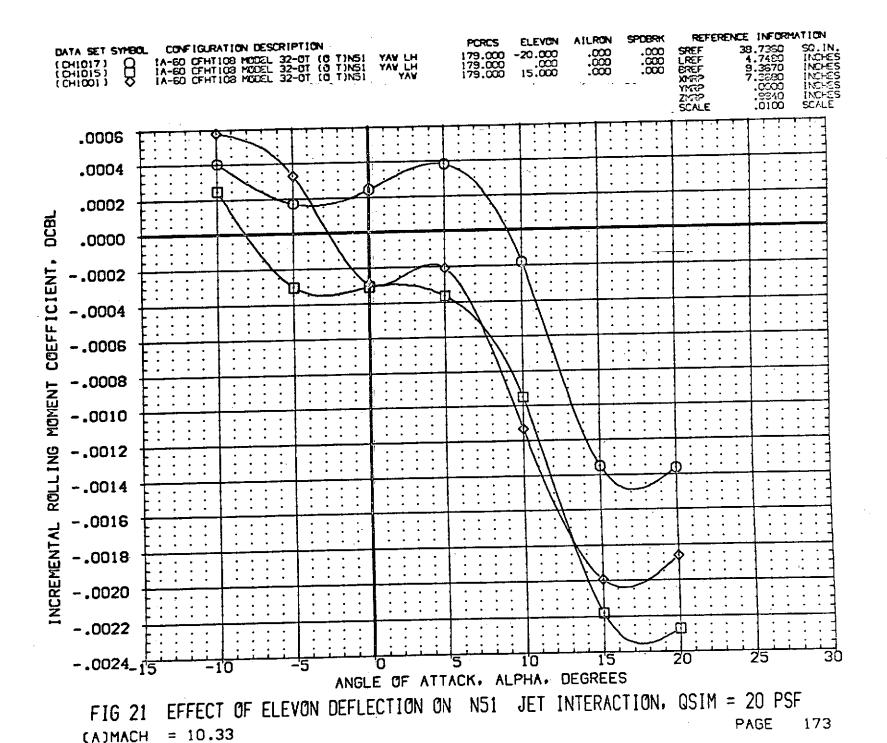


FIG 21 EFFECT OF ELEVON DEFLECTION ON N51 JET INTERACTION, QSIM = 20 PSF

(A)MACH = 10.33



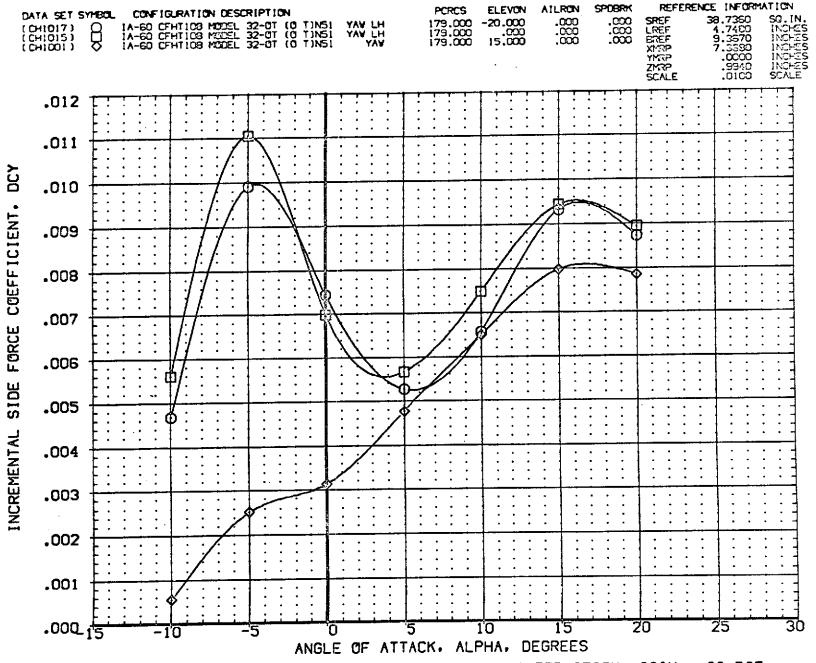


FIG 21 EFFECT OF ELEVON DEFLECTION ON N51 JET INTERACTION, QSIM = 20 PSF

(A)MACH = 10.33

PAGE 174

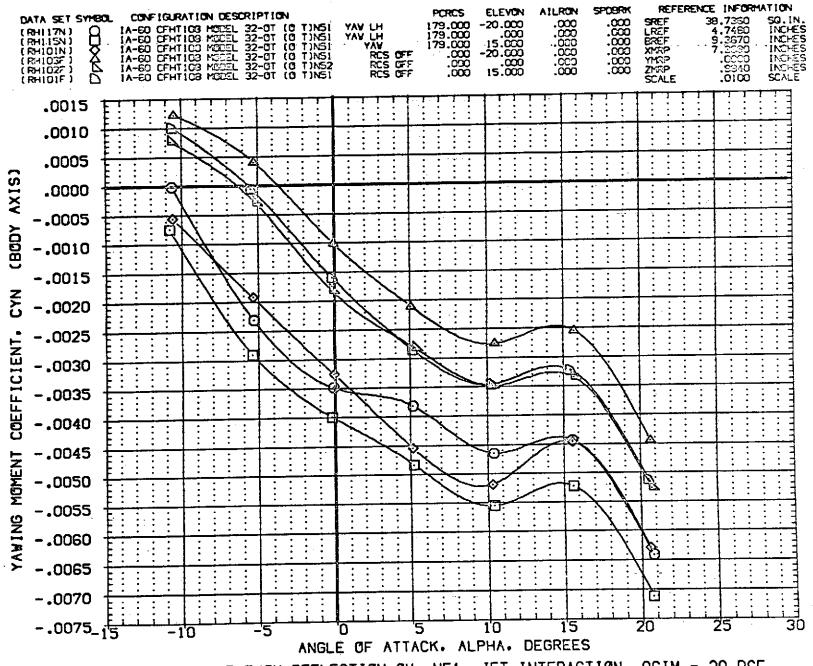


FIG 21 EFFECT OF ELEVON DEFLECTION ON N51 JET INTERACTION, QSIM = 20 PSF

(A)MACH = 10.33

PAGE 175

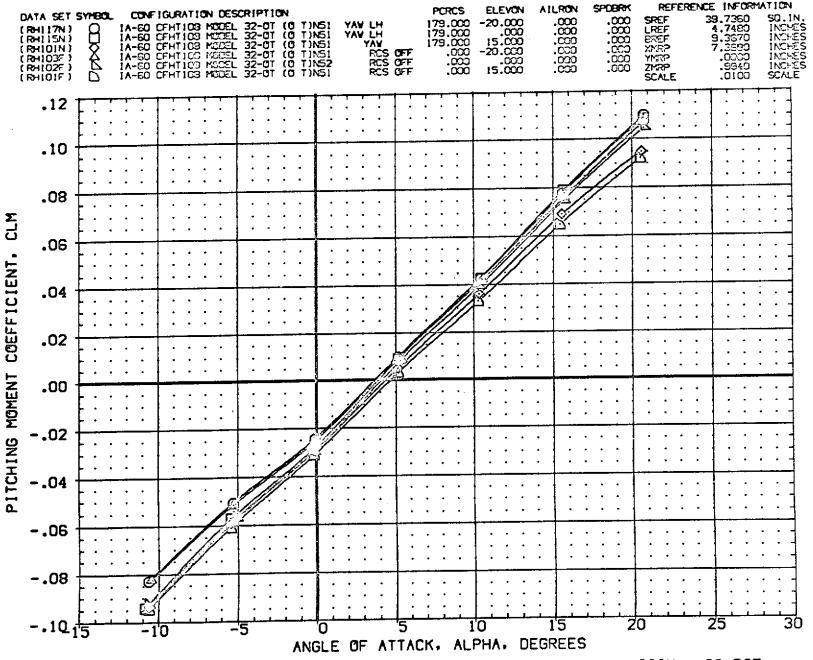


FIG 21 EFFECT OF ELEVON DEFLECTION ON N51 JET INTERACTION, QSIM = 20 PSF

(A)MACH = 10.33

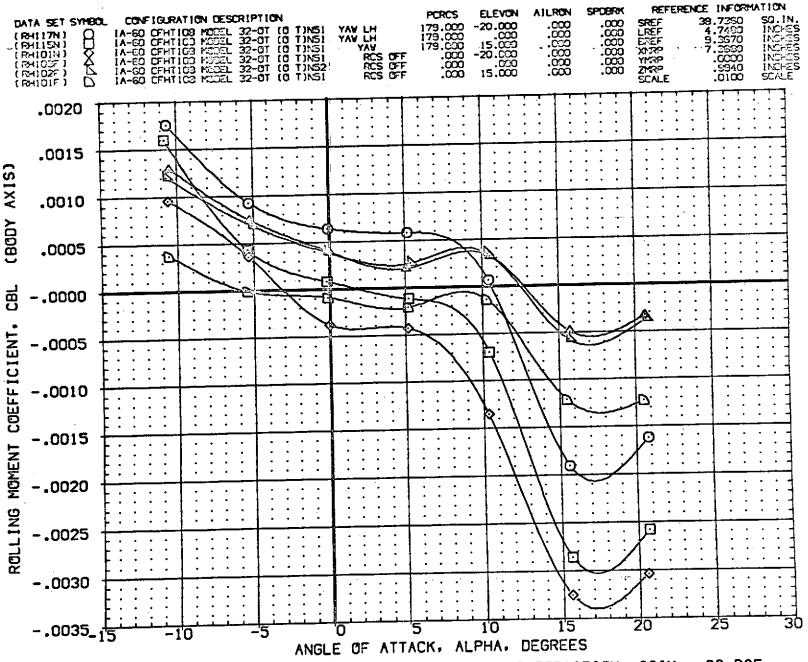


FIG 21 EFFECT OF ELEVON DEFLECTION ON N51 JET INTERACTION, QSIM = 20 PSF

(A)MACH = 10.33

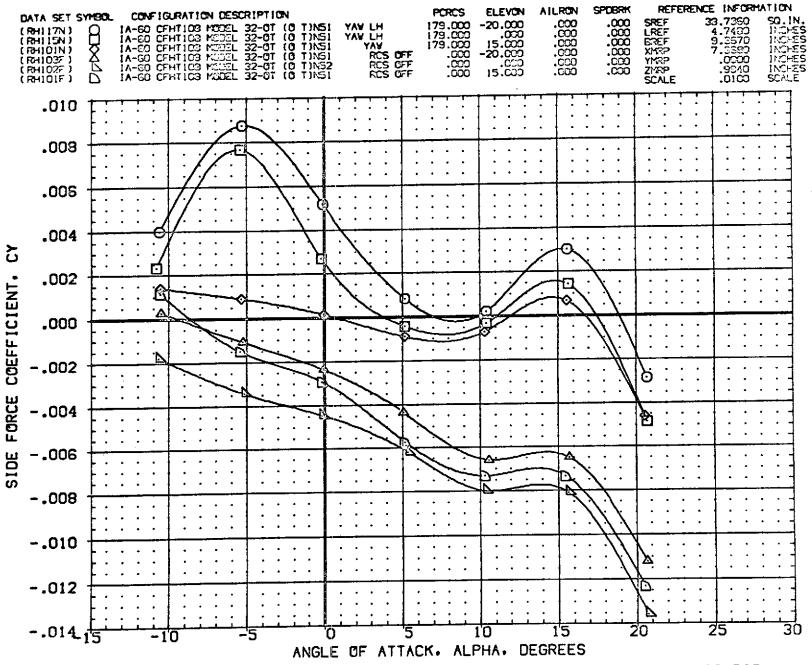


FIG. 21 EFFECT OF ELEVON DEFLECTION ON N51 JET INTERACTION, QSIM = 20 PSF
(A)MACH = 10.33
PAGE 178

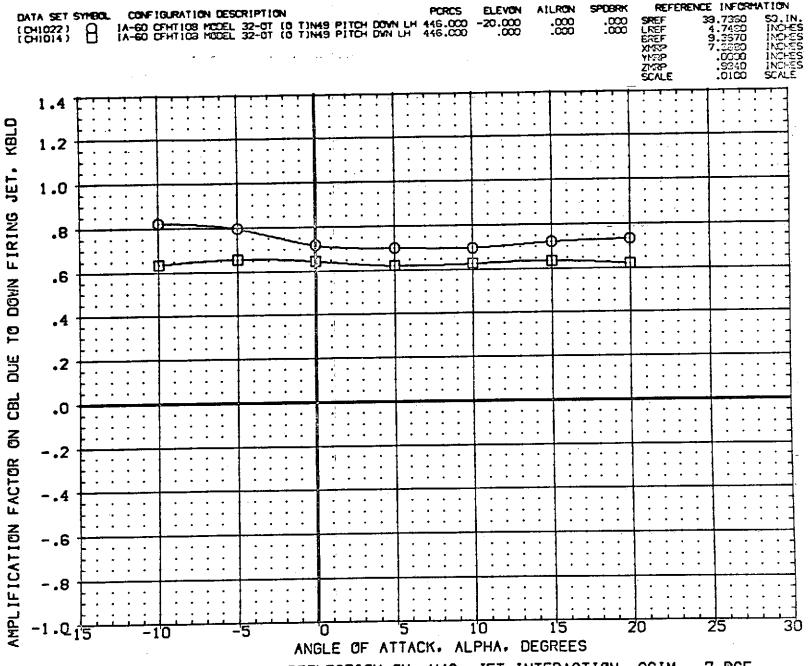


FIG 22 EFFECT OF ELEVON DEFLECTION ON N49 JET INTERACTION, QSIM = 7 PSF

(A)MACH = 10.33

PAGE 179

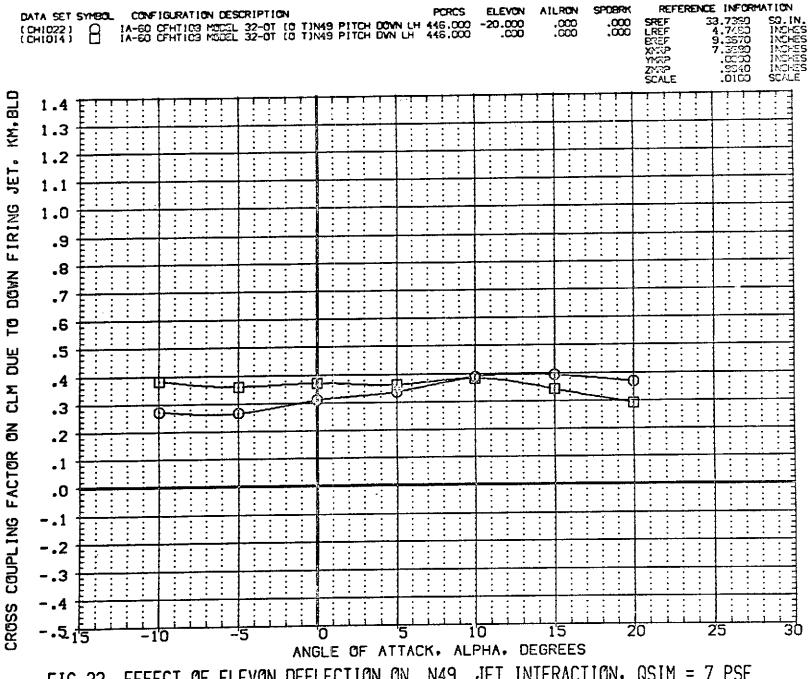
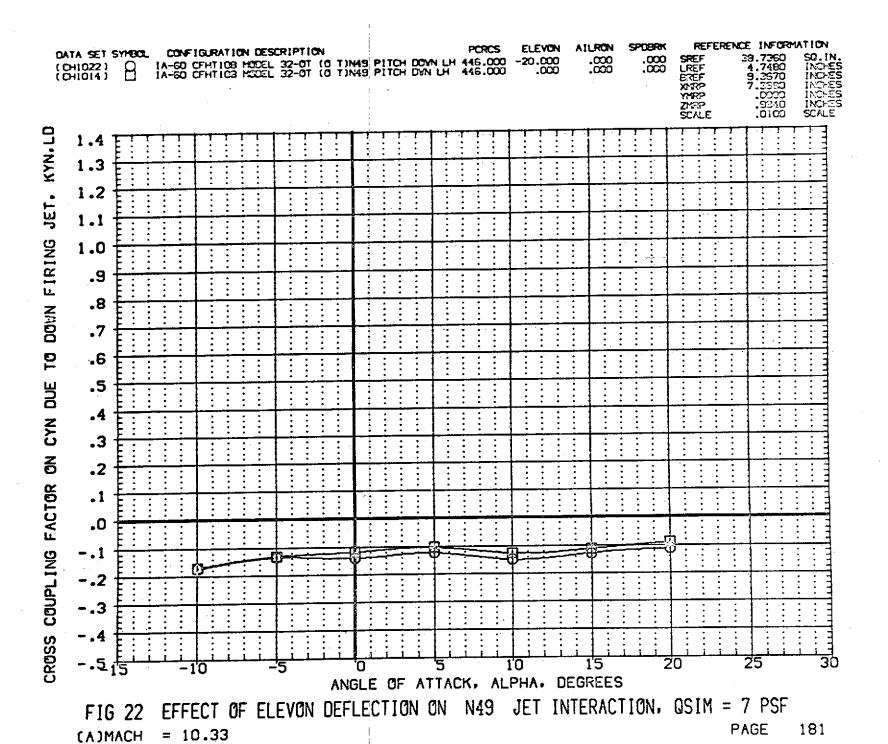
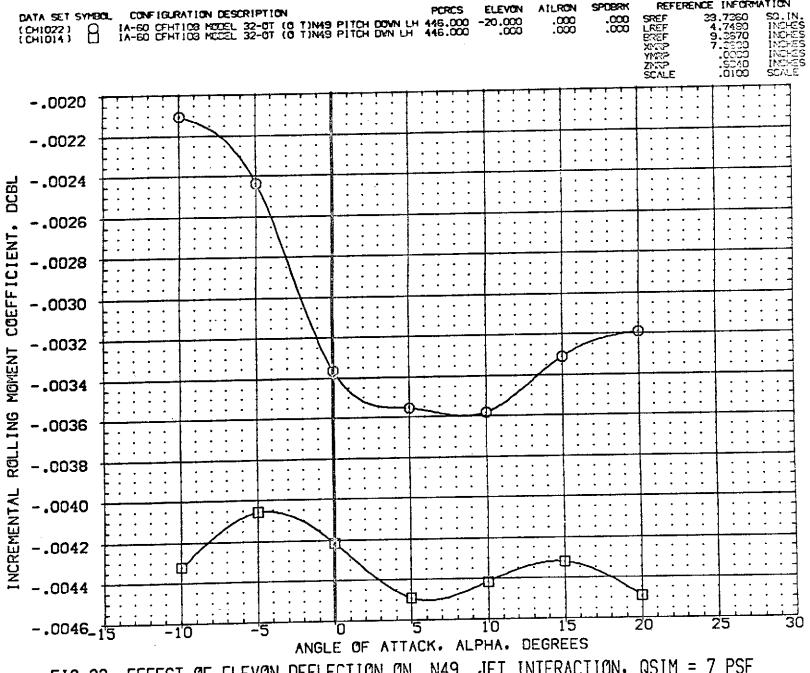


FIG 22 EFFECT OF ELEVON DEFLECTION ON N49 JET INTERACTION, QSIM = 7 PSF

(A)MACH = 10.33

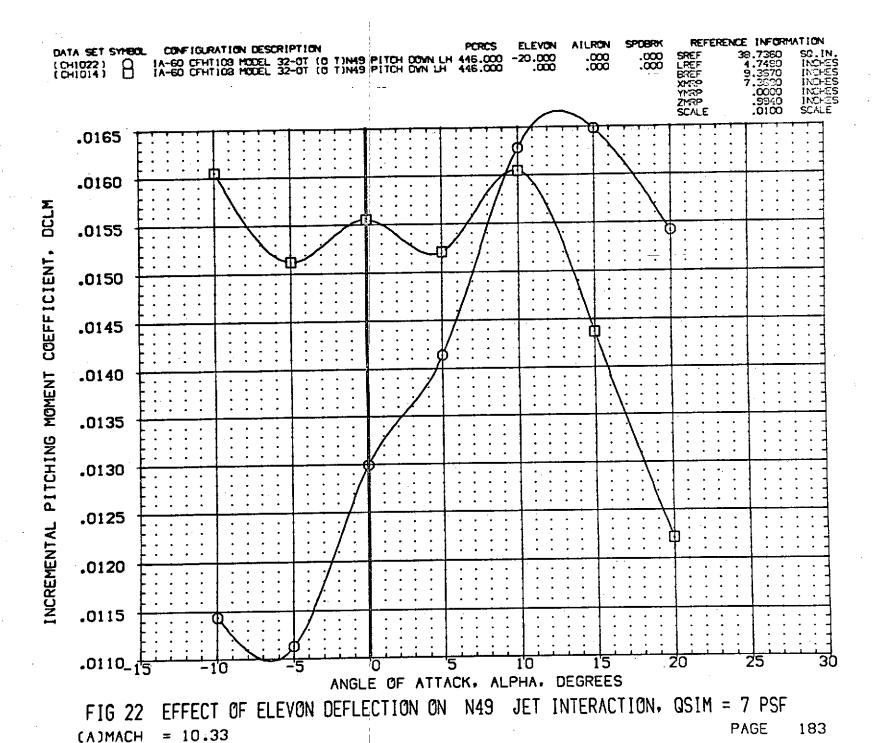
PAGE 180

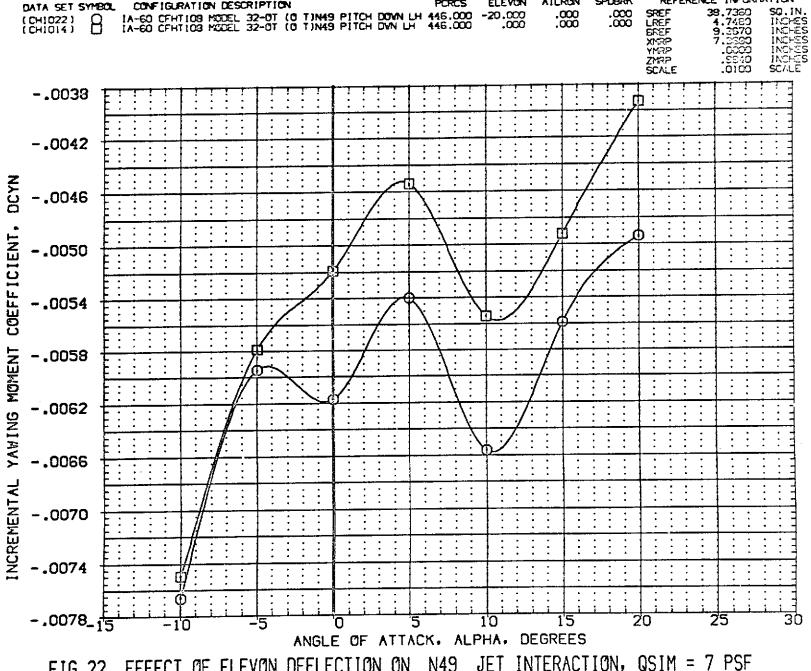




REFERENCE INFORMATION

EFFECT OF ELEVON DEFLECTION ON N49 JET INTERACTION, QSIM = 7 PSF PAGE 182 = 10.33(A)MACH





ELEVON

SPOBRK

AILRON

REFERENCE INFORMATION

FIG 22 EFFECT OF ELEVON DEFLECTION ON N49 JET INTERACTION, QSIM = 7 PSF PAGE 184 (A)MACH = 10.33

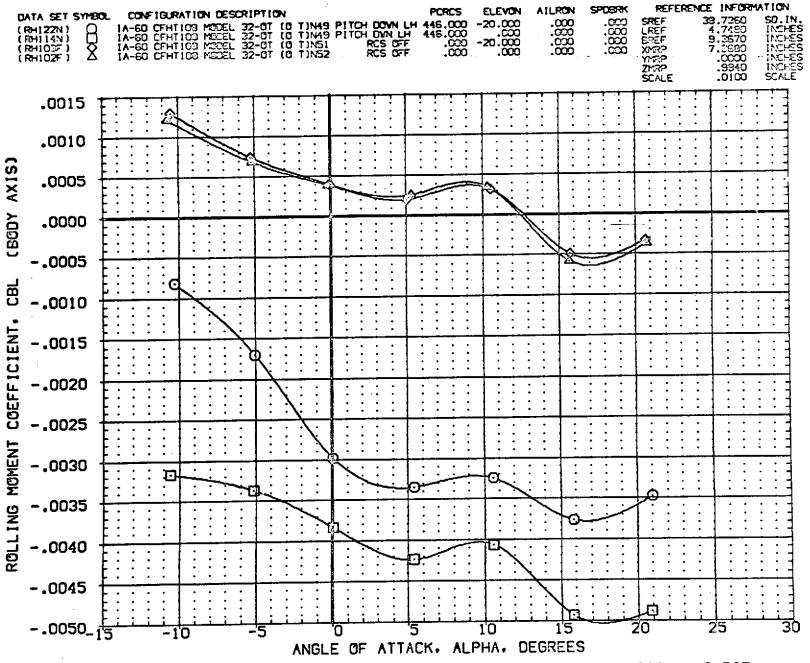


FIG 22 EFFECT OF ELEVON DEFLECTION ON N49 JET INTERACTION, QSIM = 7 PSF

(A)MACH = 10.33

PAGE 185

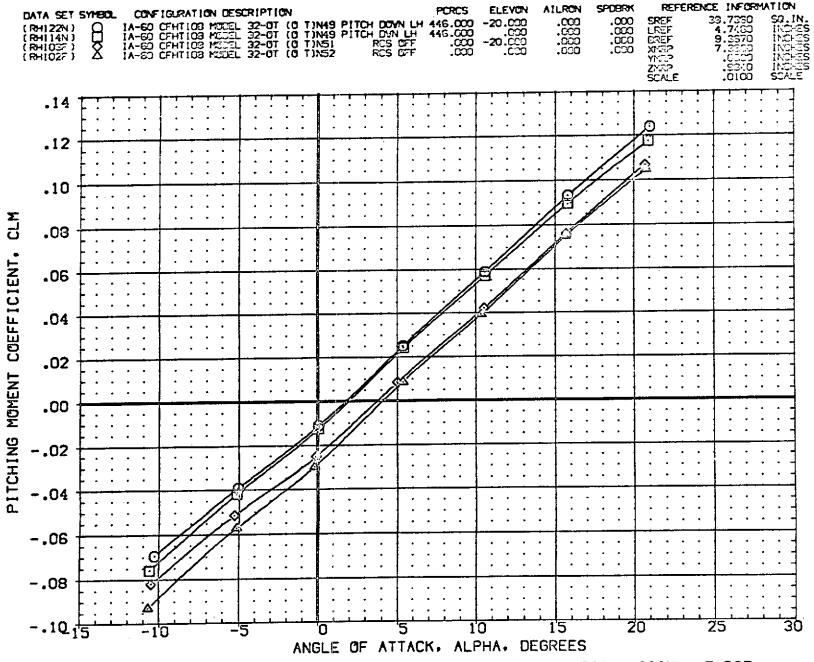
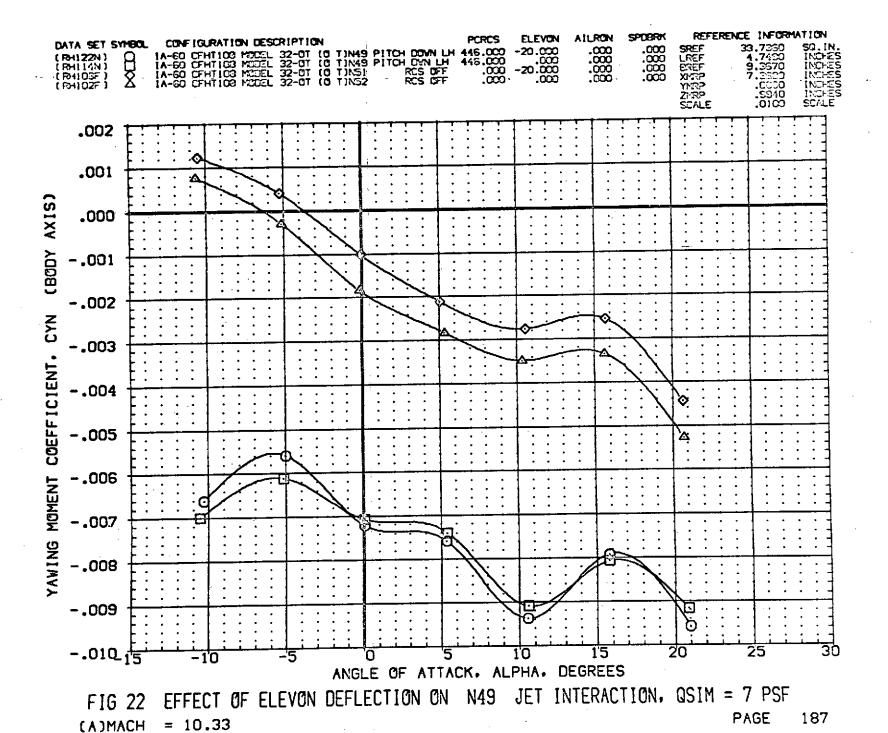


FIG 22 EFFECT OF ELEVON DEFLECTION ON N49 JET INTERACTION, QSIM = 7 PSF

(A)MACH = 10.33

PAGE 186



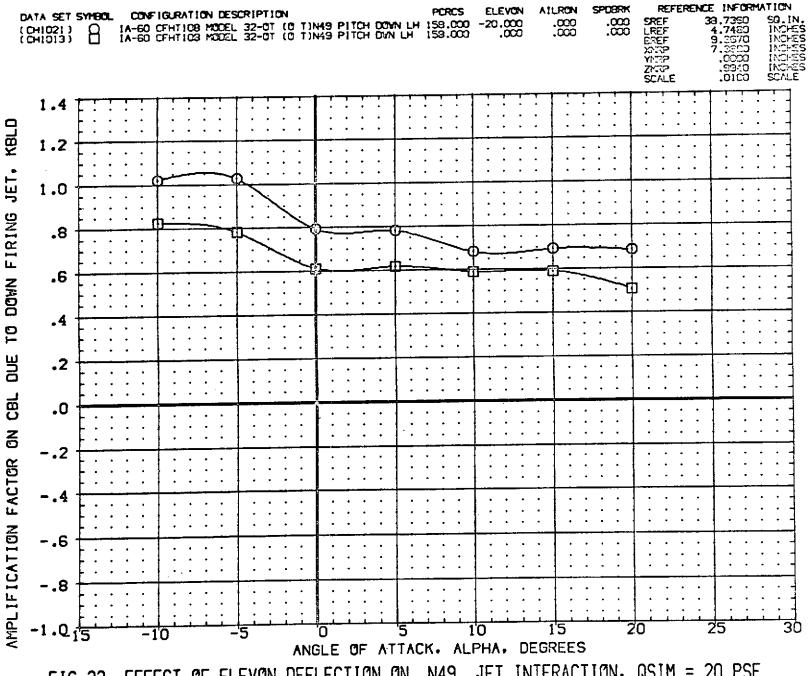
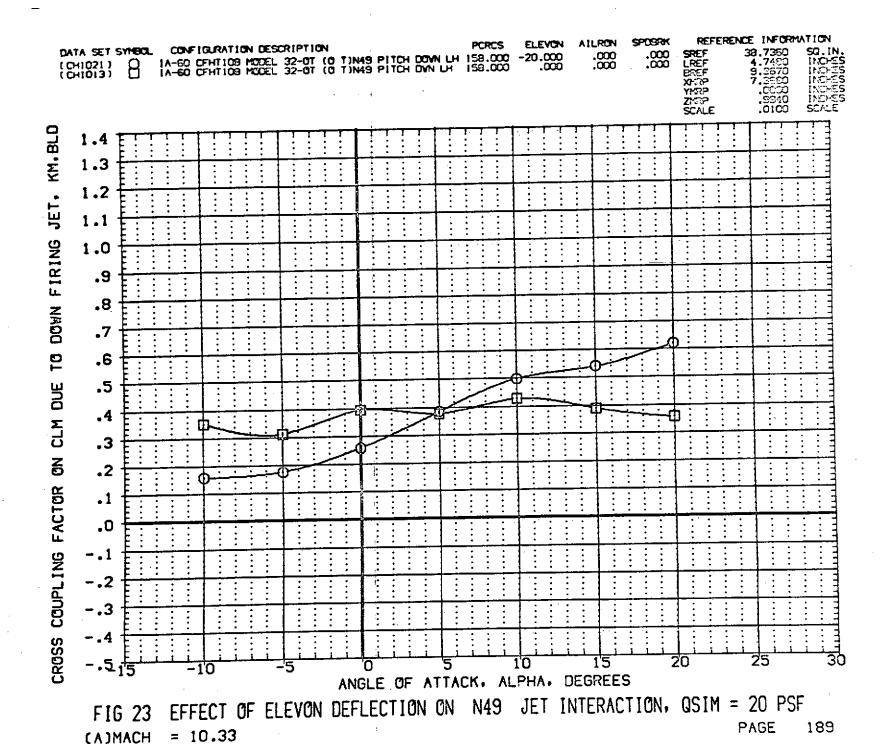
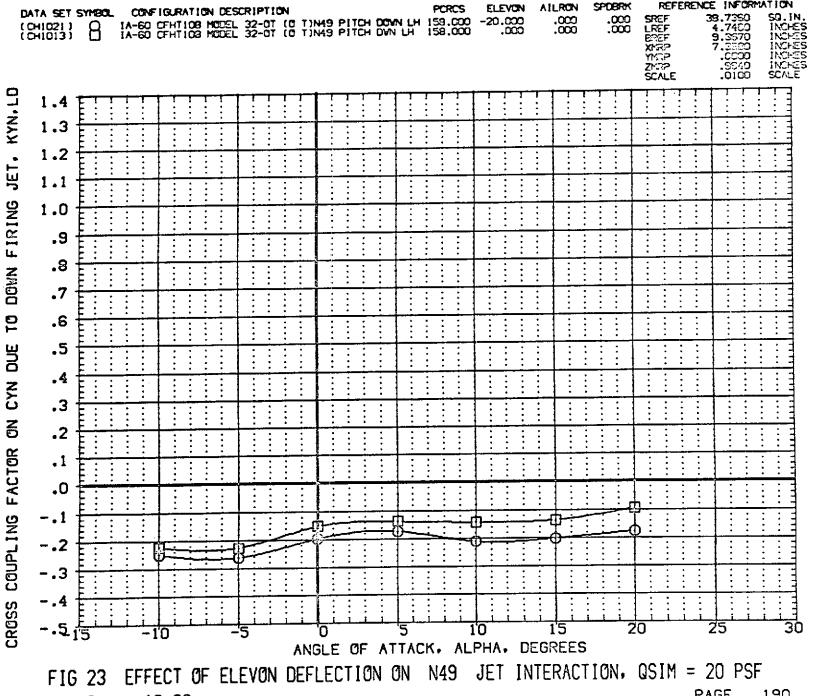


FIG 23 EFFECT OF ELEVON DEFLECTION ON N49 JET INTERACTION, QSIM = 20 PSF

(A)MACH = 10.33

PAGE 188

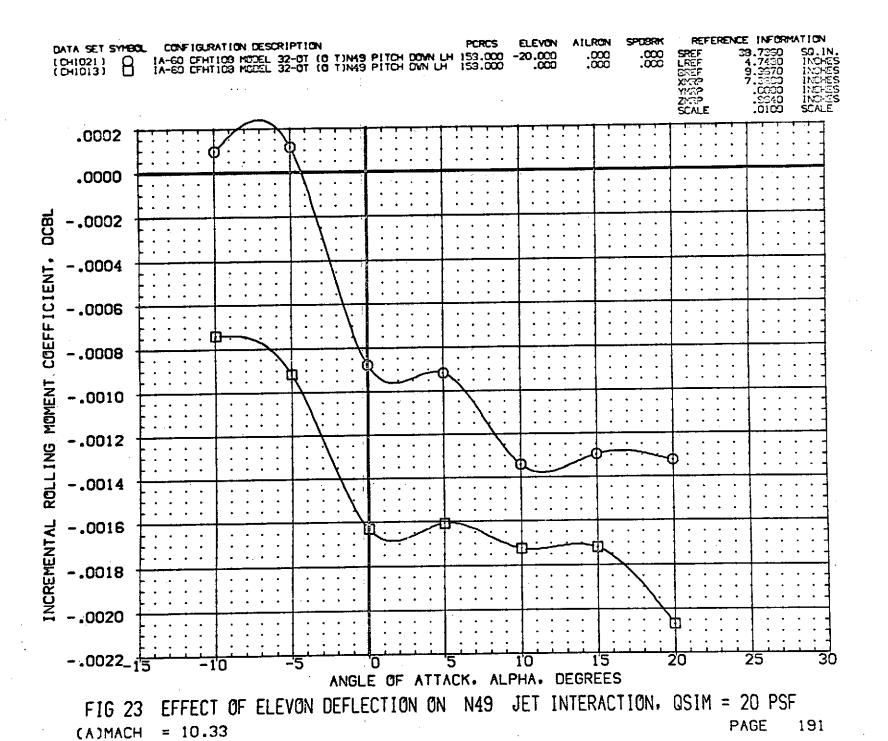




REFERENCE INFORMATION

SP08RK

PAGE 190 = 10.33(A)MACH



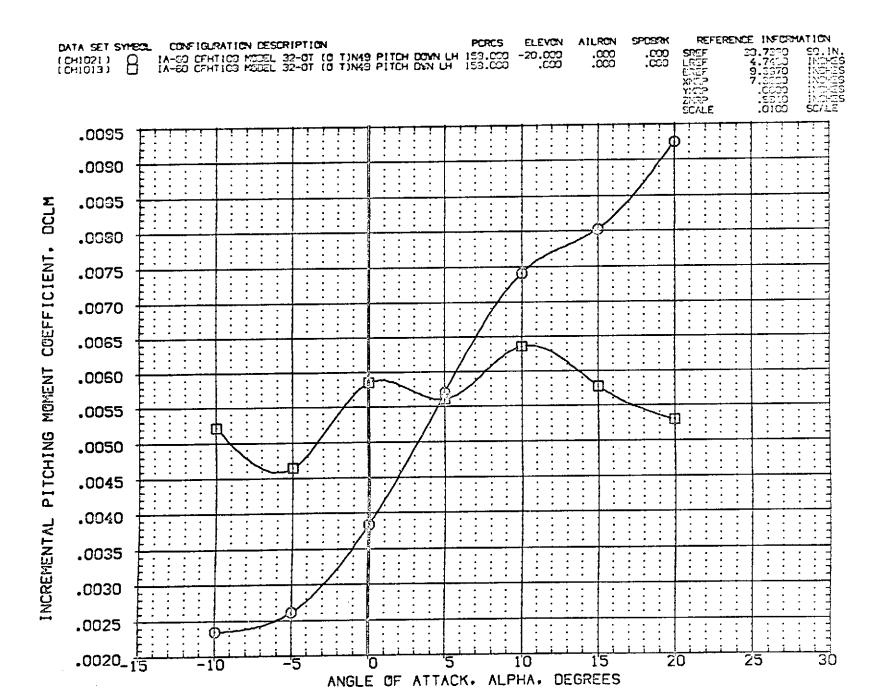


FIG 23 EFFECT OF ELEVON DEFLECTION ON N49 JET INTERACTION, QSIM = 20 PSF

(A)MACH = 10.33

PAGE 192

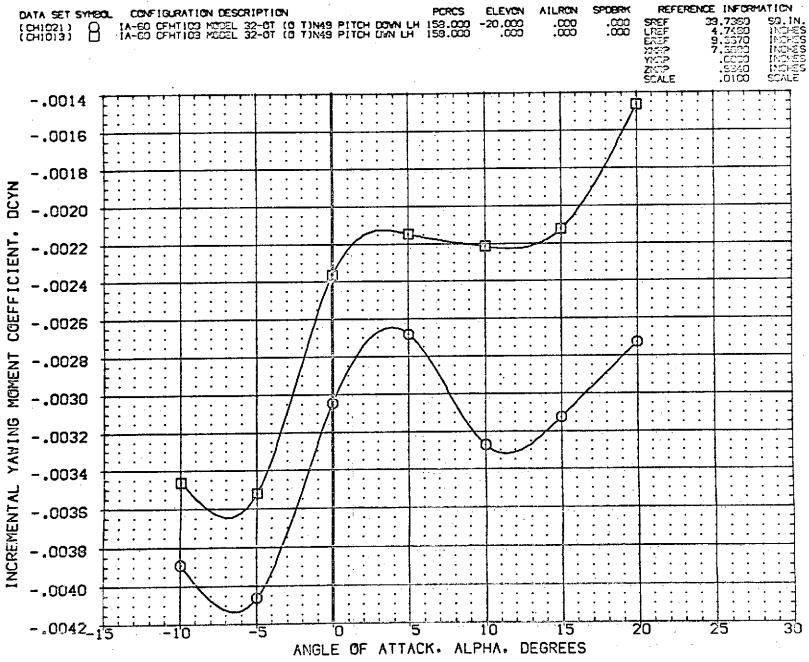


FIG 23 EFFECT OF ELEVON DEFLECTION ON N49 JET INTERACTION. QSIM = 20 PSF
(A)MACH = 10.33
PAGE 193

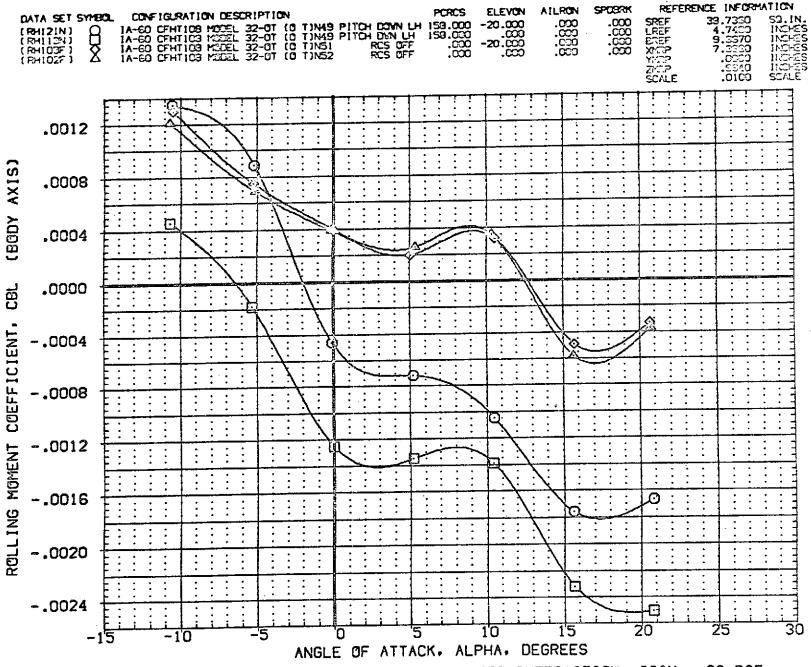


FIG 23 EFFECT OF ELEVON DEFLECTION ON N49 JET INTERACTION, QSIM = 20 PSF

(A)MACH = 10.33

PAGE 194

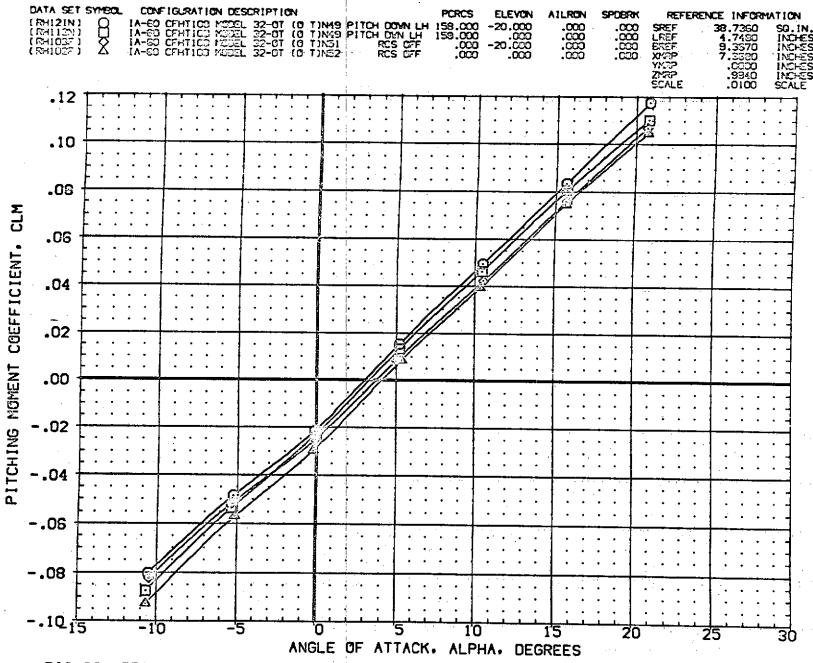


FIG 23 EFFECT OF ELEVON DEFLECTION ON N49 JET INTERACTION, QSIM = 20 PSF
(A)MACH = 10.33

PAGE 195

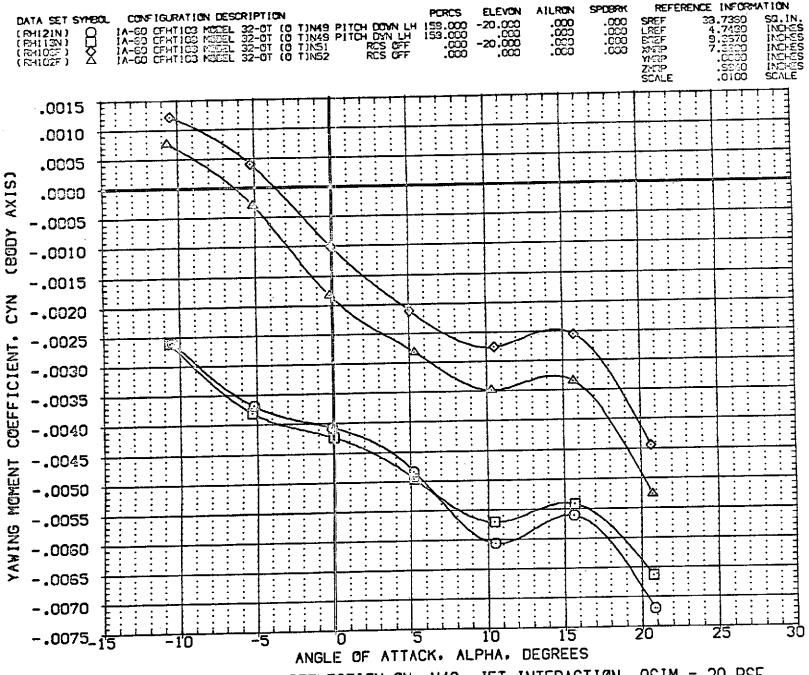


FIG 23 EFFECT OF ELEVON DEFLECTION ON N49 JET INTERACTION, QSIM = 20 PSF

PAGE 196

APPENDIX TABULATED SOURCE DATA

Tabulations of plotted data are available on request from Data Management Services.

P	۸	G	F		

.00000

.30520

.00000

-.01358

,00000

,12047

.09990

(14 MAR 74) (RHIDIF) 1A-60 CFHT108: MODEL 32-OT (O T) N51 RCS OFF PARAMETRIC DATA REFERENCE DATA 150,000 .000 Q (PSF) = BETA = 7.3680 INCHES 38,7360 \$Q.IN. XMRP = SREF = 15,000 .000 ELEVON = FCRCS = .5000 INCHES 4.7480 INCHES YMRP LREF .000 BOFLAP = .000 AILRON = ZMRP # .9940 INCHES 9.3670 INCHES BREF = .000 SPCBRK = .0100 SCALE SCALE = GRADIENT INTERVAL = -5.00/ 5.00 1.00 RN/L = RUN NO. PCRCS CL CD CYN CY CBL CLM ON CA ALPHA BETA .45584 MACH .27042 .00116 -.20251 ,00101 .00036 .22859 -.09441 -.24877 -.01309 -10.593 10,330 .21117 .45632 -.13228 -.00151 -,00001 -,00005 .19768 -.06094 -.99566 -.15169 10.330 -5.436 .41429 -.04665 ,16500 -.00292 -.00009 -.00160.16485 -.03119 -,04716 .00728 -.178 10,330 .41417 .14650 .02666 -.00572 -.00021 -.00285 .00297 .14352 .01691 .03966 10.330 5,142 .15255 .11312 ,41440 -.00731 -,00346 .03289 -.00014 ,12989 .02266 .13855 10.330 10,268 .41429 .18092 80205. -.00323 -.00733 -.00121 .24394 .12028 .06495 .01359 15.452 10,330 .24839 .37260 .31693 -.01232-.00513 .09209 -.00123 .12153 .36369 .02409 10,330 29,521 ,00000 .00000 ,00000 .00000 בנוספס. . ססטסס .09000 .00000 .000000 .00000 GRADIENT (14 MAR 74) (RH102F) RCS OFF IA-60 CFHT108 MODEL 32-OT (O T) N52 PARAMETRIC DATA REFERENCE DATA 150,000 Q (PSF) = .000 BETA = 7.3680 INCHES 38.7360 SQ.IN. XMRP .000 ELEVON = PCRC5 ≈ .000 .0000 INCHES YMRP 4.7480 INCHES LREF .000 BOFLAP = .000 AILRON = .9940 INCHES ZMRP = 9.3670 INCHES BREF = .000 SPOBRK = .0100 SCALE SCALE = GRADIENT INTERVAL = -5.00/ 5.00 22/ 0 RN/L = RUN NO. PCRCS CD CL CYN CY CLH CBL CA ON ALPHA BETA MACH .12057 -.21899 .27731 .00121 .00077 -,00177 -.09304 -.26662 .23189 -.02233 -10,688 10.330 .D7862 -.00344 ~,13999 ,21027 -.05722 .00069 -.00029 .19685 -.15831 -5.151 -.09931 10.330 ,07862 -.05748 .16591 -.00183 -.00446.00039 -.02969 .16573 .00423 -.05801 -.184 10,330 .07843 .02142 .14565 .00026 -.00283 -,00618 .14302 .00847 .01383 .03488 5.340 10.330 .07843 .10227 .14909 -.60799 .00035 -.00349 .12832 .03929 .12736 .01957 10,330 10,334 .97862 .19369 .17660 -.00335 -.00811 -.00058 .07491

-,00037

.00000

.10466

,000000

-.09527

.00000

.11770

,11333

סטטטט.

.01585

.02917

.00050

15,676

20,702

GRADIENT

10,330

10.330

.23420

.36910

1A-60 CFHT108 MODEL 32-OT (O T)N51

RCS OFF

(RH103F) (14 MAR 74)

			1A-60	CFHT1U8 M	ODEC 32-01	(O I)Mar	KC3 CIT				
	REFEREN	ICE DATA							PARAMETRIC	DATA	
SREF =	38.7360 \$6	LIN. XMRP	= 7.36	80 [NCHES				BETA =	.000	Q (PSF) =	150,000 -20,000
LREF =	4.748D IN		= .00	00 INCHES				PCRCS =	.000	ELEVON =	.000
BREF =	9.3670 IN		= ,99	4U INCHES				AILRON =	.000	BOFLAP =	•000
SCALE =	.0100 SC							SPOBRK ≖	.000		
	•			ental —	.98 GRA	DIENT INTER	• -5 f	nnz 5.00			
		RUN N	io. 30/ 0	RN/L =	.30 004	DIEM IMIEN				•	
Miles	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	PCRCS
MACH	-10.510	02151	28334	.23261	08241	.00130	.00123	.00031	-,23616	.28039	.24564
10,330	-5.270	01261	-,17682	.19784	-,05142	.00975	.00041	00108	15790	.21325	.24554
10,330	- 084	.00061	06455	.16408	02503	.00040	00101	-,00236	-,06431	.16417	.28755
10,339		01159	.02157	.14266	.00841	.00020	00211	09435	.00899	.14400	.28766
10.330	5,025 10,543	.01529	.12083	.12633	.04221	.00932	00276	00658	.09567	,14630	.24533
10,330	=	.01155	.22164	.11634	.07613	00049	-,00255	00650	.18185	.17201	.28755
10,330	15,713	,02500	.34637	11217	10692	00033	00445	01122	.28444	.22726	.24533
10,339	29.678 GRADIENT	.00000	.00000	00000	.00000	.00000	,09890	.00000	.00000	.00000	.00000
						(A 1) NAO ME	a Res CEE		(RH104	F) (14 H	AR 74)
			1A-60	CFHT108 M	DDEL 32-01	(O T) N49 N5	Z KCS OFF		(111207	.,	
	REFEREN	CE DATA						•	PARAMETRIC	DATA	
							•	DÉTA -	.000	Q (PSF) =	150.000
SREF =	38.7360 SG	IN, XMRP		80 INCHES				BETA =	.000	ELEVON =	.000
LREF =	4.7480 IN	CHES YMRP	= ,OO	00 INCHES				PCRCS =	15,000	BCFLAP =	.000
BREF =	9,3670 IN	ICHES ZMRP	= .99	40 INCHES				AILRON =	סמס" המחינו	BUFLAF -	.000
SCALE =	.0100 SC	ALE						SPOBRK =	.450		
		RUN N	ю. 12/O	RN/L =	1.00 GR/	DIENT INTER	WAL = -5.0	00/ 5.00			
				C.	CLM	CBL	CYN	CY	· CL	CD	PCRCS
MACH	ALPHA	BETA	ON	CA ,23423	09045	.00464	00100	90324	22089	,27941	20404
10.330	-10.553	03828	26833	.20079	05678	.00329	-,00041	00496	14325	,21468	.16211
10.330	-5.208	01383	-,16215	.16757	02846	.00219	00236	00535	-,05439	,16764	.16191
10,330	068	.01071	05459	•	.00775	.00213	-,00370	00698	.02281	.14784	.20394
10,330	5.332	.02666	.03645	.14508	.03773	.00210	00479	00816	19689	,15277	.25394
10,330	10,343	,04445	.13250	.13112	.07354	.00267	00520	00838	19936	10164	.16211
10.330	15,665	.05145	.24100	,12106		.00463	00824	01389	.30957	.24265	.16211
10,330	20.653	.09158	.37526	.11787	.19286 .00000	.00000	.00024	.00000	,00000	.05000	.00000
		4949474747	(22)(3)(3)(3)	CORRE	3 17 17 17 1	LUUUUU	101111111		,		

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.05007

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5,277

10,288

15.483

20,584

GRADIENT

10,330

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		1A-60 CF	HT108 HOCEL	32-07 (0	T) N49 N52	RCS OFF		(RH105F) (14 MA	R 74)
								PARAMETRIC	DATA	
	REFERENCE DATA		;				BETA =	.000	Q(PSF) =	150,000
SREF =	3011300 0-11		INCHES				PCRCS =	.000	ELEVON =	.000
LREF =	4.7480 INCHES YMR		INCHES				AILRON =	-15.000	BOFLAP =	.000
BREF =	9,3670 INCHES ZMR	P = .9940	INCHES				SPOBRK =	, סטס		
SCALE =	DIGD SCALE		•				Je DDALL	•		
	RUN	NO. 47/0	RN/L = 1.0	DD GRAD	LENT INTERV	AL = -5.0	0/ 5.00			
				CLM	CBL	CYN	CY	CL	CD	PCRC\$
MACH	ALPHA BETA	•		.09303	-,00221	.00021	00191	22372	.28501	-,00618
10,330	-10,641 .00564			-	00201	00052	-,00358	-,14376	,21999	00601
10,330	-5.337 .00717	*		.05859 .03104	00152	00173	00482	-,05726	.17190	-,05636
10.339	-,262 .01490				00180	00262	00748-	.02383	15134	- 04812
10.330	5.161 .01846		V =	,00704	00239	00267	-,00923	.11118	,15563	- 99627
10,330	10.361 01255		-	.03908	- 00421	00197	00970	.20131	.18316	99627
10,330	15.54800774	•		.07401	00603	- 00297	- 01509	.32066	.25194	04621
10,330	20,75402140	.38913		.10533	.00000	00000	.00000	.00000	.00000	.00000
	GRADIENT	.00000	.00000	.00000	• 600000	,				
	•		J		- TINAO MES	RCS OFF		(RH106	F) (14 M	AR 74)
	•	IV-60 (FHT108 HODE	L 32-01	O ()1445 1432	. 11.5 41				
÷	REFERENCE DATA		J		•		,	PARAMETRIC	DATA	
•	-						BETA =	.000	Q(PSF) =	150,000
SREF =	38.7360 SQ.IN. XM		INCHES,		•		PCRCS =	.000	ELEVON =	.000
LREF =	4,7480 INCHES YM		INCHES			-	AILRON =	5,000	BCFLAP =	.000
BREF =		유 = .994	INCHES				SFDBRK =	טפם.		
SCALE =	.0100 SCALE				•		G DDIVI			
		N NO. 50/0	RN/L = : 1.	.O3 GRAI	ENT INTER	VAL = -5.	00/ 5.00			
	KU	N NO. 50/0								PCRCS
	ALPHA BETA	ÇN .	CA .	ČLM	CBL	CYN	CY	CL	CD	
HACH				.08975	.09203	.00122	00033	21334	.26884	.16151
10,330				.05733	.00128	.00042	-,00156	14192	.20818	.29373
10,330	-5.30500309		,	.02921	.00081	00090	00246	-,05630	.16367	.16131
10,330	-,229 ,01158	-,03030	14111	.00758	.00074	00227	00479	.01967	.14352	.16151

14-60 CENTIUS MODEL 32-OT (O T) N49 N52 RCS OFF

(RH107F) (14 MAR 74)

			14-60	CFHT108 M	OCEL 32-OT	(O T) N49 N22	KCS OFF		(
	REFEREN	E DATA							PARAMETRIC	DATA	
								BETA =	.000	Q (PSF) =	150.000
SREF =	38,7360 59.			BO INCHES				PCRCS =	.000	ELEVON =	-20,000
LREF =	4,7480 INC	CHES YMRP	-	00 INCHES				AILRON =	10.000	BDFLAP =	,000
BREF =	9.3670 INC	CHES ZMRP	= .99	40 INCHES				SPDBRK =	.000	551 CA	
SCALE =	.0100 SC	ALE						SECOND -	,,,,,		
		RUN N	0. 53/0	RN/L =	1.02 GRA	DIENT INTER	/AL = -5.0	109 5.00			
•							cvti	CY	CL	CD	PCRCS
HACH	ALPHA	BETA	CN	CA	CLM	CBL	CYN	00302	-,24697	.29097	.11979
10,330	-19,323	06628	29512	.24200	08054	.09678	.00430	00382	16757	.22489	.07767
10,330	-5.342	03320	18778	.20832	05111	.00498	.00228	00462	06985	,16984	.07777
10.339	181	.00220	07039	.16962	02569	.00242	50044	00628	.00828	.14738	.97767
10.330	5,051	.02130	.02122	.14608	.00925	.00138	00223	00020	.09542	,14861	.07786
10,330	10,341	.03126	.12055	.12996	.04210	.00112	00313	00807	.18478	,17532	.07786
10.339	15,541	.02906	,22500	.11949	.97789	.00022	00316		.29631	.23408	.07758
10,330	20,707	.04821	.35994	.11419	.11926	.00070	00535	-,01397	.00000	.00000	.00000
••••	GRADIENT	.00000	.00000	.00000	.00000	,00000	מספפס.	.00000	.00000	.50555	
			´								
			1A-60	CFHT188 H	ODEL 32-OT	(O T) N49 N5	2 RCS OFF		(RH108	F)	AR 74)
	REFEREN	CE DATA		,					PARAMETRIC	DATA	
	MERENEM										
SREF =	38.7360 59	IN. XMRP	= 7.36	80 INCHES		•		BEȚA =	.000	Q (PSF) =	150.000
LREF =	4.7480 IN		= .00	000 INCHES				PCRCS =	.000	ELEVON =	.000
BREF =	9,3670 IN		= .99	40 INCHES			•	AILRON =	.000	BOFLAP =	.000
SCALE =	.0100 SC	-					•	SPOBRK =	55.000		
SCACE -	,										
		RUN N	D. 42/ D	RN/L =	1.00 GRA	DIENT INTER	VAL = -5.	00/ 5.00			
					CLM	CBL	CYN	CY	ÇL	CD	PCRCS
MACH	ALPHA	BETA	CN .	CA .24715	98754	.00109	.00097	09314	-,22573	,29365	94829
10.330	-10.591	01556	27585		05503	.00055	00015	00466	14647	.22358	13217
10,330	-5.270	00287	16638	.20919		.00033	00171	00524	-,06080	,17479	-,94812
10,330	-,163	.01454	06129	.17462	02734	.00029	00293	00729	.01605	.15231	04821
10,330	5,126	.02405	.02960	.15027	.00917	.00032	00255	-,00853	.16398	,15432	09023
10,339	10,382	.03113	.13009	.13306	.04176		00333	-,00891	,19612	,18983	54821
19.330	15.590	.02520	,23750	.12147	.07693	00068	00546	01481	.31692	.24475	09032
10,330	29,779	.03935	.38314	.11640	.10841	-,00048		-,01461	.01052	מממטם.	,00000
	CRACIENT	. בסממט	.00000	.00000	.00000	ם מטטמם	,00000	• 00000			

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GRADIENT

TABULATED SOURCE DATA -	I AGO	•	PAGE	:

			1A-6D	CFHT108 M	DEL 32-01	(O T) N51	WAY	-	(RH101	N) (18 M	AR 74)
	REFERENC	E DATA	•						PARAMETRIC	DATA	
_	4	IN. XMRP	= 7.366	O INCHES				BETA =	.000	Q (PSF) =	150.000
SREF =	36,7360 59.			19 INCHES				PCRCS =	179,000	ELEVON =	15,000
LREF =	4,7480 INC		=	ID INCHES				AILRON =	םפם.	BDFLAP =	.000
BREF =	9,3679 INC		5.54	in Inches				SPOBRK =	.000		
SCALE =	,0100 SCA	ILE		•							
		RUN N	0. 4/ 0	RN/L 🗦	.97 GRA	DIENT INTER	VAL = -5.0	ניס, 5 / סו		-	
***	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CÁ	CL	CD	PCRCS
MACH	-10,590	-,00049	25154	.22622	09375	.00096	-,00055	.00141	-,20568	.26860	180,17342
10,330	-5.353	.01476	15454	.19507	-,05889	.00036	00193	.00099	-,13567	.29864	178,92075
10,330	-	.02863	-,05237	16204	02876	00038	-,00326	,00016	05213	.16212	178.37447
19,339	684	.04089	.03418	14027	,00510	00043	00455	00090-	.02144	.14277	178.31290
10,339	5.158		.12889	12624	.03698	00135	00519	-,00070	.19419	.14729	179,24562
10,339	10.317	.04174	.22897	11642	.06908	00326	00446	.00068	.18931	,17361	178,69938
10,330	15,571	.02339	37197	.11726	.09494	00304	00629	00461	.30708	.24945	178,08032
19,339	20,565	.03195	.00050	.00000	.00000	.00000	.00000	.00000	.00000	.00000	,00000
	GRADIENT	.00000	.00000	.00000	•00000		••••	,	_		
			IA-60	CFHT1U8 M	ODEL 32-01	(O T) N51	YAW		(RH102	N) (18 M	IAR 74)
	REFERÈNC	E DATA		1					PARAMETRIC	DATA	
		.IN. XMRP	- 7 16	O INCHÉS				BETA =	.000	Q (PSF) =	159,000
SREF =	38,736D SQ.			DO INCHES				PCRCS =	504,999	ELEVON =	15.000
LREF =	4,7480 INC		• • • •	O INCHES				AILRON =	.099	BDFLAP =	.000
BREF = SCALE =	9,3670 INC		± ,55.	to tucues		•		SPOBRK =	.000		
JUNEO -			. ,			DIENT INTER		5,00			5
		RUN N	io. 5/ 0	RN/L =	.99 GRA	DIENI TUIEN	WAL5.6	JOJ 3,00	-		
MACH	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	· CL	CD	PCRCS
10,330	-10.624	.04017	-,25739	.22336	09212	.60107	00298	.01007	21180	,26699	504.70161
	-5.299	.06515	+,16795	.18967	05636	00097	00498	.01547	14882	.20428	504,58641
10.339	.011	.07194	07956	15492	02572	00048	00570	.01013	07959	,15491	505,00663
10,330	5.357	.08521	.01189	13359	0976	00076	00751	.00940	00063	.13412	504,64921
10,330		.00521	.11233	12050	.04579	- 00273	00870	.01349	.08881	.13875	594.48157
10,330	10,368	' - '	.21467	.11153	.07436	00579	- 99566	.01049	.17630	.16566	504,85981
10.339	15,768	.93419	.35232	.11363	G9854	00617	00735	.00571	.28988	.23924	505,00088
19,339	20,563	.03256	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
	GRADIENT	00000	, 11000	***************************************	, 655511	•	• -				

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TA-60 CENTIES MODEL 32-OF (O T)N49 N50 PITCH DWN

(18 MÁR 74) (RH103N)

			14-60) CFHT188 M	DEL 32-01	(O T) N49 N3	U PIICH DW	•	1.4.1.		
	REFEREN	CE DATA							PARAMETRIC	DATA	
								BETA =	.000	Q (PSF) =	150.000
SREF =	38.7360 50		•	80 INCHES				PCRCS =	167,000	ELEVON =	15,000
LREF F	4,7480 IN		•	ign INCHES				ATLEON #	.000	BDFLAP #	.000
DREF =	9.3670 IN		= ,99	140 INCHES				SPDBRK =	.000		
SCALE =	.0100 SC	ALE									
		RUN I	10. 6/ g	RN/L =	98 GRA	DIENT INTER	VAL = -5.	מם, 5 ,טם			
			i	c.	CLM	CBL	CYN	ÇΥ	CL	CD	PCRCS
HACH	ALPHA	BETA	CN	CA .22256	08976	.00009	00237	,00438	-,22049	.26768	167.2493
10.330	-10.599	,02878	-,26596	.19148	05554	00987	00328	.00528	-,14919	.20635	167.50149
10.339	-5.370	.03946	16784	.15958	02528	00106	09453	.00212	06038	.15960	167,21787
10,330	023	.04553	06045	.13629	.01051	00175	00476	+.00069	.01387	.13817	167,46987
10,339	5.318	.04198	.02662		.01951	00175	-,00532	00208	.10271	.14238	167.56464
10,339	10.540	.04223	.12792	.12119	.07179	00263	00546	00256	.18946	.16840	167,4799
19,339	15.511	.03531	.22759	.11160	.09760	00311	00609	00797	.31008	,23632	167.1758
10.339	29.596	.02638	.37339	.11214	.00050	.00000	מפפנים	.00000	.00000	,00000	,0000
	GRADIENT	,00000	.00000	*00000	• 655555	10000	•				
			IA-6L	CFHT198 M	ODEL 32-01	(O T) N49 N5	O PITCH DW	N .	(RH104	N) (18 M	AR 74)
	Design Co.	CC 0474						•	PARAMETRIC	DATA	
	REFEREN	CE DATA							***	A 45 a = 1	150.000
SREF =	38.7360 SQ	.IN. XMRP	= 7,30	SOU INCHES				BETA =	,000	Q(PSF) =	
-	4.748U IN			100 INCHES				FCRCS =	469,000	ELEVON =	15,000
	9.3670 IN			940 INCHES				AILRON =	000	BOFLAP =	.000
_	.0109 SC	-	•					SPCERK =	.000	-	
SCALE =	.0100 00	ACL									
		RUN	NO. 7/0	RN/L =	.97 GRA	DIENT INTER	VAL = -5.	00/ 5.00			
		5571	αN	CA	CLM	CBL	CYN	CY	εL	CD	PCRCS
MACH	ALPHA	BETA	-,28967	,20625	07810	00275	-,00600	.01750	24770	.25513	468,7883
10.330	-10,396	.09743	19068	.17155	04356	00363	00568	.01599	17487	.18764	468,6581
10.330	-5,041	.08718	09435	.14278	01315	-,00438	00691	.01221	09461	,14261	468,6287
10,339	,195	.08518	-,09435	.11991	.02102	00439	05726	.00772	01460	.11997	468.6161
10.339	5.389	.07415	00355	10638	.05291	00465	00865	.01045	.07776	,12289	468,6581

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GRADIENT

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14-60 CFHT108:HODEL 32-OT (O T)N49 N52 ROLL

(RH105N) (18 MAR 74)

	REFEREN	ICÉ DĂTĂ							PARAMETRIC	DATA	
SREF = LREF = BREF = SCALE =	38.7369 39 4.7480 IN 9.3670 IN .0100 SC	ICHES YMRP	= .00	80 INCHES 00 INCHES 40 INCHES				BETA = PCRCS = Allron = SPCBRK =	.000 158.000 .000 .000	Q(PSF) = ELEVON = BDFLAP =	150,000 15,000 ,000
		RUN N	ю. в/ D	RN/L =	1.01 GR/	DIENT INTER	RVAL = -5.0	00, 5,00			
Maga	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD .	PCRCS
MACH	-10.553	01645	26866	.21997	-,08921	00103	.00131	00165	-,22383	.26546	158,12017
10,330	-5.216	02808	16812	16888	05465	00293	.00202	00431	15025	.20338	158,11894
10,330 10,330	063	10168	07676	.15675	-,02563	00665	,09679	01829	07653	.15686	158.18214
	5.242	09204	.01057	13620	.01163	00692	,00474	91857	00191	.13659	158.10896
10,330	10.485	01582	.12020	.11995	.04086	-,00416	00134	00803	.09636	.13982	158,18003
10,330	10,465	.00158	,22671	.11144	.07319	00362	00318	00640	,16841	.16827	158.14011
10,330	20,610	01347	.37623	.11227	.09941	-,99419	00316	01254	,31263	.23752	158.94699
10.330	GRADIENT	.00000	.00000	,00000	.00000	םמניסם,	.00999	.00000	,00000	.00560	.00000
,		5.71	1A-60	С ЕНТ108 Н	ODEL 32-01	(O T) N49 N5	i2 ROLL	.·	(RH106		AR 74)
•	REFEREN	KE DATA		•							
SREF =	38,7360 50	TIN. XMRP	= 7,36	80 INCHES				BETA =	.000	Q(PSF) =	150.000
LREF =	4.7480 IN		= .00	IOO INCHES				PCRCS =	446,090	EFEACH =	15.000
BREF =	9.3670 I	CHES ZMRP	= .99	40 INCHES		•		AILRON = SPOBRK =	.000 000	ODFLAP =	.000
SCALE =	,0100 SC	ALE					,		•••		
		RUN N	NO. 9/0	RN/L =	1.02 GR	WIENT INTER	RVAL = -5.	00/ 5.00			•
Maria	ALPHA	BETA	ON	CA	CLM	CBL	CYN	CY	CL	CD .	PCRCS
MACH 10,330	-10.466	-,11594	29751	.19787	08008	01009	.01154	01496	25662	.24652	443,20675
	-5.149	-,24129	20121	.16789	04361	01695	.02037	03218	-,18533	.18527	447,67569
10,330	-	12143	-,12465	.14010	01420	01218	.00884	01548	-,12472	.14003	447.12934
10,330	.030	02991	03097	.11791	.02063	09852	.00068	00310	04186	.11450	444.87368
10.330	5,365	02991	.07534	.10346	.05087	09755	00105	-,00269	.05511	.11551	444.88781
10,330	10.555		.18839	.09318	.08317	00840	-,00056	09436	.15597	.14988	446.30268
10,330	15.773	04448	.34467	.09551	.10680	00840	00123	01113	.28836	.21160	446.58286
19,330	20,783	05901	.00000	םסטפס.	.00000	.00000	.00000	00000	,00000	פמטסם.	.00000
	GRADIENT	.00000	.Duooo		******		*****	-			

(RH107N) (18 MAR 74) 1A-60 CFHT108 MODEL 32-01 (0 T) N52 PITCH UP

	ter-Dr.	ICE BATA							PARAMETRIC	DATA	
		ICE DATA	= 7.36	80 INCHES				BETA =	000	Q (PSF) =	150.000
SREF =	38,7369 \$9			DO INCHES				PCRCS =	158.000	ELEAON =	15.000
LREF =	4.7480 IN		-	40 INCHES				AILRON =	.000	BDFLAP =	.000
BREF =	9.3670 IN		± .99	4U INCHES				SPOBRK =	.000		
SCALE =	.0100 SC	ALE									
		RUN N	0. 10/0	RN/L =	1,00 GRA	DIENT INTER	VAL = -5.0	0/ 5.00			
		BETA	CN	CA	CLM	CBL.	CYN	CY	ÇL	CD	PCRCS
MACH	ALPHA	05733	25763	.23052	09511	00005	.00384	00794	21081	.27418	149,08118
10,330	-10,645	07163	-,15561	19800	06042	00171	.00464	01271	-,13664	.21154	154.25110
10,330	-5.305	12584	05911	16315	03184	-,00511	.00825	02327	05866	.16331	152.47968
10.330	157		.02924	14392	.00551	00624	.00812	02679	.01622	.14596	152.27560
10,339	5,141	13835	.13382	,12057	.03442	00293	.00148	01611	.10856	.15050	152,54095
10,330	10.344	05007	.24962	.12234	.06644	00235	00049	91333	.19938	.18198	157,30717
10,330	15.438	02708	=	12327	.09405	00230	00235	01774	.32441	.25292	157,25521
10,330	20.503	-,01397	.39245 .00000	,00000	.00000	.00000	.00000	.00000	םפטטם.	.00000	.00000
	GRADIENT	,90000	*00000	100500		• • • • • • • • • • • • • • • • • • • •					
			1A-60	CFHT108 M	ODEL 32-OT	(O T) N52	PITCH UP		(RH108		IAR 74)
	REFEREN	ICE DATA			•		-		PARAMETRIC	DATA	
		i.in. XMRP	= 7.36	BO INCHES			•	BETA =	.000	Q(PSF) =	150.000
SREF =	38,7360 56			DO INCHES			•	FCRCS =	446.000	ELEVON =	15.000
LREF #	4,7480 IN	·CIILO	• • •	40 INCHES				AILRON =	.000	BOFLAP =	.000
BREF =	9,3670 IN			1	-			SPDBRK =	•טטט		
SCALE =	tition se	ALE			•						
		RUN N	D. 11/ 9	RN/L =	1,00 GR/	DIENT INTER	RVAL = -5.0	00/ 5.00			
***	ALPHA	BETA	٥N	CA	CLM	CBL	CYN	CY	CL	CD	PCRCS
MACH		22113	-,26525	,22200	09487	00703	.01608	03217	21994	.26696	441,51134
10.330	-10,500	-	16601	.19466	05931	01362	.02619	-,05901	-,14710	.20932	447,70359
10.330	-5,360	33578	08120	16209	03022	01096	.91840	04143	08066	.16236	446.68094
10,330	192	26105	.01438	.14074	.00594	00670	.00883	02510	.90158	.14147	443.17895
10.330	5,196	-,14333	.12078	.12685	.03576	00379	.00347	01720	.09594	.14655	447,08718
10.330	10,386	-,07489		.12003	.06727	00463	.00398	01911	.19323	.17806	445,47618
10,330	15.453	08652	.23369	.11973	.09583	00444	.00255	02523	,31941	.24781	447,88505
10,330	20.589	08345	,38613	,00000	.00000	.00000	.00000	.00000	.00000	.00000	םמפסם.
	CRACTENT	פפפפט.	.00000	,00000	* กกกกกก	* *********					

.00000

GRADIENT

.17793

.29880

.000000

.00344

.00383

.00224

.00000

-.00362

-.09438

-.99497

.00000

.04090

.07474

.19624

.00050

.12334

.11425

.11098

.00000

.10198

.21660

.36144

.00000

-,01649

-.01077

-.02526

.00000

.13974 446,96442

445,63000

445.74253

.00000

.16826

.23167

.00000

5,201

10,412

15,589

20,718.

GRADIENT

-,07398

-.08675

-.07953

.00000

19,330

10,330

19.339

10.330

(18 MAR 74) (RH109N) PITCH UP 1A-60 CENTION MODEL 32-OT (O TIN52 PARAMETRIC DATA REFERENCE DATA 150,000 Q (PSF) = .000 BETA = XMRP = 7.3680 INCHES SREF = 38.736D 50.1N. נטם. PCRCS = 158,000 ELEVON = .0000 INCHES YMRP = 4.7480 INCHES LREF = BCFLAP = .000 ,000 AILRON = .9940 INCHES ZMRP = 9.3670 INCHES BREF = .000 SPOBRK = .0100 SCALE SCALE = RN/L = : 1.00 GRADIENT INTERVAL = -5.00/ 5.00 RUN NO. 23/ 0 PCRCS CL CD CY CYN CA CLM CBL ON ALPHA BETA MACH .27285 157.68553 -,22170 .00402 -.00734 .00009 .22767 -.09124-.26789 -10.544 -.06206 19,330 -,14604 .20951 157.75965 -,01195 -.05762 .00464 .19501 -.00141-.16489 -.07333 -5,338 19,330 .16162 157.61365 -.06767 -.00503 .00856 -.02298 -.02901 .16142 -,13257 -.06813 10,339 -,163 .14269 157.58156 .00466 -.02616 .00837 .00922 -.00611 .01745 .14169 -.14927 10.330 5.159 .14399 157.59151 .00131 -.01511 .09387 .04009 -.00263.12475 -.U4817 .11831 10,392 10.330 ,17382 157,56935 .18592 -.00079 -.01221 .07419 -.00186 .11759 .22578 -.02137 19,330 15,581 .23588 157.83157 -.01907 .30519 -.00183 -.00204 ,19516 ,36687 ,11279 10,330 -,01639 29,699 .00000 .00000 םפפפט. .00000 םםססםם, .00000 .00000 םםםםםם. .00000 GRADIENT .00000 (12 APR 74) (ZH110N) . IA-60 CFHT108 MODEL 32-OT (O T)N52 PITCH UP PARAMETRIC DATA REFERENCE DATA מנים. @ (PSF) = 150,000 BETA = XMRP 7.3680 INCHES 38.7360 SQ.IN. SREF = .000 ELEVON = PCRCS = 446,000 .0000 INCHES 4.7480 INCHES YMRP = LREF = .000 .000 BOFLAP = AILRON = .9940 INCHES 204RP = 9.3670 INCHES erer = SPOBRK = .000 .0100 SCALE SCALE = RN/L = 1.01 GRADIENT INTERVAL = -5.00/ 5.00 24/ 0 RUN NO. PCRCS CL CD CBL CYN ' CY CLM CΝ CA ALPHA BETA MACH .26868 446.96456 -.03119 -,23228 .01801 -.09162 -,00670 .22068 -,27828 -.22393 -10,740 19,330 .25660 446.91915 -.15465 -.01339 .02625 -.05019 -.05524-.17309 .19141 -5.396 -.34139 10,330 -.08752 .15977 446.37263 -.03879 .01767 -.01054 .15975 -.02602 -.08756 -,25261 -,017 10.330 .13876 445.92426 -.02403 -.00967 -.00645 .00847 .13996 .00966 -,13874 .00295

(RH111N) (16 MAR 74) 1A-60 CFHT108 MODEL 32-OT (O T)N49 N52 ROLL

See		REFEREN	ICE DATA							PARAMETRIC	DATA	
MACH	LREF =	4.7480 IM 9.3670 IM	ICHES YMRP	= .00	100 INCHES				FCRCS = AILRON =	158,000 ,000	ELEVON =	,000
MACH ALPHA BETA CN CA CLM CBL CTN CT CD CTN CT CTN			RuN	NO. 29/ 0	RN/L =	.98 GRA	DIENT INTER	VAL = -5.0	5.00			
10,330	MACH	AL PHA	BETA	CN	CA	CLM	CBL	CYN				
10.330				28078	.21798	08492	00080	,00065	-			
10.330			-	-	.18802	05211	00229	.00116	-,00296	15969	.29348	
10,330				-		02192	09667	.00663	01861	08790	.15598	
10,330	-	_	-	-	-	.01573	09655	.00449	01819	01418	.13324	
10.335		-	_	-		.04578	09378	00194	00710	.98193	.13397	
10.330 20.77900477 .34875 .10446 .11042003590038901296 .28900 .22139 157.55941			-		-		00364	00273	00562	.17216	.15996	-
Ta-60 CFHT1G8 MODEL 32-OT (O T) N49 N52 ROLL RH112N) (18 MAR 74) REFERENCE DATA PARAMETRIC DA			•	•	-	-	00359	00389	-,01296	.28900	.22139	
REF = 36.7360 SQ.IN. XMRP = 7.3660 INCHES REF = 4.7480 INCHES YMRP = .0900 INCHES REF = 9.3670 INCHES ZMRP = .9940 INCHES RUN NO. 21/ 0 RN/L = .98 GRADIENT INTERVAL = -5.00/ 5.90 MACH ALPHA BETA CN CA CLM CBL CYN CY CL CD PCRCS 10.330 -10.2950940031495 .194990731001100 .010410108727503 .24814 446.65289	10.330		-		_		-	.00000	.00000	.00000	,00000	.00000
SREF = 38,7360 SQ.IN. XMRP = 7,3680 INCHES LREF = 4,7480 INCHES YMRP = .9000 INCHES BREF = 9,3670 INCHES ZMRP = .9940 INCHES RUN NO. 21/ 0 RN/L = .98 GRADIENT INTERVAL = -5,00/ 5.00 MACH ALPHA BETA CN CA CLM CBL CYN CY CL CD PCRCS 10,330 -10,2959940031495 .194990731001100 .010410108727503 .24614 446,65289 10,330 -4.9002510821172 .164880383901739 .020660341519686 .18236 445,46209 10,330 -0871058113523 .139480109701135 .007460138513545 .13928 445,22373 10,330 -5,4810250504154 .11704 .0247790814900010037505255 .11254 445,26577 10,330 -10,81801714 .06264 .10135 .05699007190017500374 .04250 .11130 446,13432 10,330 -15,72903833 .16496 .08938 .08864080660013200424 .13456 .13975 446,07835 10,330 -20,86004558 .31612 .08857 .11695007490021800122 .26386 .19534 446,03631 10,330 -20,86004558 .31612 .08857 .11695007490021800122 .26386 .19534 446,03631 10,330 -20,86004558 .31612 .08857 .00550 .0012100255 .00467 .012310066404780		REFEREN	ICE DAȚA	1A-69	CFHT108 M	DCEL 32-0T	(O T) N49 N5	2 ROLL				AR 74)
LREF = 4.7480 INCHES YMRP = .0000 INCHES BREF = 9.3670 INCHES ZMRP = .9940 INCHES SCALE = .0100 SCALE RUN NO. 21/ 0 RN/L = .98 GRADIENT INTERVAL = -5.00/ 5.00 MACH ALPHA BETA CN CA CLM CBL CYN CY CL CD PCRCS 10.330 -10.2950940031495 .194990731001100 .010410108727503 .24814 446.65289 10.330 -4.9002510821172 .164880383901739 .020660341519686 .18236 445.46209 10.330 .0871058113523 .139480109701135 .007460138513545 .13928 445.22373 10.330 5.4810250504154 .11704 .0247709814000010037505253 .11254 445.26577 10.330 10.81801714 .06264 .10135 .05699007190017500374 .04250 .11130 446.13432 10.330 15.72903833 .16496 .08938 .08864080660013200424 .13456 .13075 446.07835 10.330 20.86004558 .31612 .08857 .11695007490021801122 .26386 .19534 446.03631				- 736	an INCHES				BETA =	,000	Q(PSF) =	150,000
BREF = 9.3670 INCHES ZMRP = .9940 INCHES SPDBRK = .000 BDFLAP = .0000 BDFLAP =				-	•				PCPCS =	446,000	FIFVON =	1000
SPDBRK = .0000 RUN NO. 21/ 0 RN/L = .98 GRADIENT INTERVAL = -5.00/ 5.00 MACH ALPHA BETA CN CA CLM CBL CYN CY CL CD PCRCS 10.330 -10.2950940031495 .194990731001100 .010410108727503 .24814 446.65289 10.330 -4.9002510821172 .164880383901739 .020660341519686 .18236 445.46209 10.330 .0871058113523 .139480109701135 .007460138513545 .13928 445.22373 10.330 5.4810259504154 .11704 .0247790814000010037505253 .11254 445.26577 10.330 10.81801714 .06264 .10135 .05699007190017500374 .04250 .11130 446.13432 10.330 15.72903833 .16496 .08938 .08864008060013200424 .13456 .13975 446.07835 10.330 20.86004558 .31612 .08857 .10650 .0012100265 .00407 .012310046404780		-		= .0:	NO INCRES				1000			•
MACH ALPHA BETA CN CA CLM CBL CYN CY CL CD PCRCS 10.330 -10.295 09400 31495 .19499 07310 01100 .01041 01087 27503 .24814 446.65289 10.330 -4.900 25108 21172 .16488 03839 +.01739 .02066 03415 19686 .18236 445.46209 10.330 .087 10581 13523 .13948 01097 01135 .00746 01385 13545 .13928 445.26577 10.330 5.481 02505 04154 .11704 .02477 99814 00001 00375 05253 .11254 445.26577 10.330 10.818 01714 .06264 .10135 .05699 00719 00175 00374 .04250 .11130 446.13432 10.330 15.729 03833 .16496 .08938 .08864 00806 001	D. 121	9.367U IN		- 06	AD INCUES							
MACH ALPHA BETA CN CA CCH CB CH CT		•		± .99	140 INCHES				AILRON =	מפח.		
10,330 -10,2950940031495 .194990731001100 .010410108727503 .24814 446,65289 10,330 -4,9002510821172 .164880383901739 .020660341519686 .18236 445,46209 10,330 .0871058113523 .139480109701135 .007460138513545 .13928 445,22373 10,330 5,4810250504154 .11704 .0247700814000010037505253 .11254 445,26577 10,330 10,81801714 .06264 .10135 .05699007190017500374 .04250 .11130 446,13432 10,330 15,72903833 .16496 .08938 .08864008060013Z00424 .13456 .13075 446,07835 10,330 20,86004558 .31612 .08857 .11695007490021801122 .26386 .19534 446,03631 10,330 20,86004558 .31612 .08857 .11695007490021801122 .26386 .19534 446,03631		•	ALĖ			.98 GRA	OIENT INTER	VAL = -5.0	AILRON = SFDBRK =	מפח.		
10,330		.0100 SC	ALĖ RUN	NO. 21/0	RN/L =				AILRON = SPDBRK =	.000 .000	BDFLAP =	,555
10,330	МАСН	.0100 SC	RUN BETA	NO. 21/0	RN/L =	CLM	CBL	CYN	AILRON = SFDBRK = DD/ 5.00	, abb , abb	BDFLAP =	,990 PCRCS 446,65289
10,330	MACH 10,330	.0100 SC ALPHA -10.295	RUN BETA 09400	NO. 21/0 CN 31495	RN/L = CA .19499	CLM -,07310	CBL 61100	CYN .01041	AILRON = SPDBRK = DD/ 5.00 CY01087	.000 .000 CL 27503	CD .24814	,990 PCRCS 446,65289
10,330	MACH 10,330 10,330	ALPHA -10.295 -4.900	RUN BETA 09400 25108	NO. 21/ ⁰ CN3149521172	RN/L = CA .19499 .16488	CLM 07310 03839	CBL 61100 61739	CYN .01041 .02066	AILRON = SPDBRK = DD/ 5.00 CY0108703415	.000 .000 CL 27503 19686	CD .24814 .18236	PCRCS 446.65289 445.46209
10,330 10,818 -,01714 .06264 .11305 .08864 -,08806 -,00132 -,00424 .13456 .13075 446,07835 .10,330 15,729 -,03833 .16496 .08838 .08864 -,08806 -,00132 -,00424 .13456 .13075 446,07835 .10,330 20,860 -,04558 .31612 .08857 .11695 -,00749 -,00218 -,01122 .26386 .19534 446,03631 .0330 20,860 -,04558 .31612 .08857 .10550 .00457 .00218 -,00265 .00407 .01231 -,00864 -,04780	MACH 10,330 10,330 10,330	ALPHA -10.295 -4.900	RUN BETA 09400 25108 10581	CN 31495 21172 13523	RN/L = CA .19499 .16488 .13948	CLM 07310 03839 01097	CBL 01100 01739 01135	CYN .01041 .02066 .00746	AILRON = SPDBRK = DD / 5.00 CY010870341501385	.000 .000 CL 27503 19686 13545	CD .24814 .18236 .13928	,GGG PCRCS 446.65289 445.46209 445.22373
10,330 15,729 -,03853 .1649 .08535 .1695 -,00749 -,00218 -,01122 .26386 .19534 446.03631 .0330 20,860 -,04558 .31612 .08857 .00550 .00121 -,00265 .00407 .01231 -,00864 -,04780	MACH 10,330 10,330 10,330	ALPHA -10.295 -4.900 .087 5.481	RUN BETA 09400 25108 10581 02505	CN314952117213523D4154	RN/L = CA .19499 .16488 .13948 .11704	CLM 07310 03839 01097 .02477	CBL 01100 01739 01135 00814	CYN .01041 .02066 .00746 50501	AILRON = SPDBRK = DB/ 5.0D CY01087034150138500375	.000 .000 CL 27503 19686 13545 05253	CD .24814 .18236 .13928 .11254	,GGG PCRCS 446.65289 445.46209 445.22373 445.26577
10.530 20.860 -,04558 .31612 .00657 .1056 .00407 .012310086404780	MACH 10.330 10.330 10.330 10.330 10.330	ALPHA -10.295 -4.900 .087 5.481	RUN BETA 09400 25108 10581 02505 01714	CN314952117213523D4154 .06264	RN/L = CA .19499 .16488 .13948 .11704 .10135	CLM 07310 03839 01097 .02477 .05699	CBL 51100 01739 01135 00814 00719	CYN .01041 .02066 .00746 00001 00175	AILRON = SPDBRK = DB/ 5.0D CY0108703415013850037500374	.000 .000 CL 27503 19686 13545 05253	CD .24814 .18236 .13928 .11254 .11130	PCRCS 446.65289 445.46209 445.22373 445.26577 446.13432
	MACH 10.330 10.330 10.330 10.330 10.330	ALPHA -10.295 -4.900 .087 5.481 10.818 15,729	RUN BETA094002510810581025050171403833	CN314952117213523D4154 .06264 .16496	RN/L = CA .19499 .16488 .13948 .11704 .10135 .08938	CLM 07310 03839 01097 .02477 .05699 .08864	CBL 61100 +.01739 01135 69814 00719 00806	CYN .01041 .02066 .00746 00001 00175 00132	AILRON = SPDBRK = DB/ 5.0D CY010870341501385003750037400424	.000 .000 CL 27503 19686 13545 05253 .04250 .13456	CD .24814 .18236 .13928 .11254 .11130 .13075	PCRCS 446.65289 445.46209 445.22373 445.26577 446.13432 446.07835

1A-60 CFHT108 MCCEL 32-OT (O TIN49 PITCH DIN LH

(RH113N) (18 MAR 74)

					CEL 32-01						
	REFERENC	E DATA							PARAMETRIC	DATA	
SREF = LREF = BREF = SCALE =	38.7360 50. 4.7480 INC 9.3670 INC .0100 SCA	THES YMRP	= .00	80 INCHES 00 INCHES 40 INCHES				BETA = FCRCS = AILRON = SPDBRK =	.090 158.000 .000 .000	Q(PSF) = ELEVON = BCFLAP =	,000 ,000
		RUN F	10. 26/ Q	RN/L =	1,01 GRA	DIENT INTER	VAL = -5.0	00, 5,00			
MACH 10,330 10,330 10,330 10,330 10,330 10,330	ALPHA -10,699 -5,312 -,017 5,297 10,433 15,682 20,755 GRADIENT	BETA .02853 .04340 .04094 .04294 .04739 .03509 .03505	CN282301769307289 .01466 .11152 .21881 .35513 .00000	CA .22428 .19282 .15937 .13721 .12048 .10860 .10631 .00000	CLM 08772 05354 02280 .01319 .04630 .08061 .11021 .00000	CBL .00046 00018 00125 00135 00139 00232 00251	CYN00261003810042400496005710954200663	CY .00589 .00643 .50256 00017 00090 00174 00769	CL 23576 15832 07275 .00215 08786 .18131 .29441	CD .27279 .20837 .15939 .13798 .13868 .16371 .22525	PCRCS 158.33818 158.29615 158.39614 158.34610 158.26410 158.21208 .00000
			. IA-60	CFHT108 M	DDEL 32-OT	(O T) N49 PI	TCH DWN LH	•	(RH114	N) (18 M	AR 74)
•	REFEREN	CE DATA					•		PARAMETRIC	DATA	
SREF = LREF = BREF = SCALE =	REFERENCE 38.7360 SQ. 4,7480 INC 9,3670 INC ,0100 SC.	.IN. XMRP CHES YMRP CHES ZMRP	= 7,36 = .00	80 INCHES 00 INCHES 40 INCHES				BETA = PCRCS = AILRON = SPOBRK =	.000 446,000 ,000 ,000 ,000	Q (PSF) = ELEVON = BDFLAP =	150,000 ,000 ,000
LREF =	38.7360 59 4.7480 INC 9.3670 INC	.IN. XMRP CHES YMRP CHES ZMRP	= 7,36 = .00 = .99	00 INCHES	1,D1 GRA	DIENT INTER	RVAL = -5.	PCRCS = AILRON = SPOBRK =	.000 446.090	Q (PSF) = ELEVON =	.000
LREF =	38.7360 59 4.7480 INC 9.3670 INC	.IN. XMRP CHES YMRP CHES ZMRP ALE	= 7,36 = .00 = .99	DO INCHES 40 INCHES	1.01 GRA 07605042100127502416057020897211740	CBL093179933709384004240040700493	CYN -,00699 -,00611 -,00707 -,00740 -,00910 -,00808 -,00916	PCRCS = AILRON = SPOBRK =	.000 446.090	Q (PSF) = ELEVON =	.000

DATE 23 APR 74

IA-60 CFHT108 HODEL 32-OT (O T)N51 YAW LH

(RH115N) (18 MAR 74)

REF	EREN	ΙĊΕ	DAT	٨

PARAMETRIC DATA

SREF = LREF = BREF = SCALE =	36,7360 St 4,7480 II 9,3670 IV ,0100 St	NCHES YMRP NCHES ZMRP	= .00	30 INCHES 30 INCHES 40 INCHES				BETA = PCRCS = AILRON = SPDBRK =	.000 179,000 .000 .000	Q(PSF) = ELEVON = BDFLAP =	150,000 .000 .000
		RUN	NO. 28/ G	RN/L =	1.01 GR	ADIENT INTER	VAL = -5.0	0/ 5.00			
MACH	ALPHA	BETA	CN	CA	CLH	CBL	CYN	ÇY	CL	CD	PCRCS
	-10.832	00035	27145	,23174	09413	.00160	00074	.00235	-,22307	,27863	178,72492
10,330	- ·	.03806	17126	.19794	05721	.00043	00290	.00767	-,15184	.21321	178.48396
10.330	-5.410	•	06548	,16521	02861	80000.	00399	.00271	06488	.16545	178.17847
10,330	209	.03910		.14168	.00914	-,09012	00484	00042	.01397	.14344	178.36616
10.330	5,173	.04341	.02595		.04271	09070	-,00556	00031	.09739	.14609	178,63259
19,339	10.418	.04949	.12220	.12697	· -	00286	00523	.00144	.17911	.16877	178,59055
10,339	15,644	.03573	.21799	.11422	.07891	•	00711	99487	.29217	22925	178,69415
10,339	20.719	.04163	.35438	,11106	10870	-,00258		· ·	.00000	.00000	.00000
	GRADIENT	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	, 69999	*00000
										,	
			IA-60	CFHT108 M	ODEL 32-01	(O T)N51 Y	AW LH		(RH116	N) (18 M	IAR 74)

	CF	

38,7360 SQ.IN. XMRP =

.00000

GRADIENT

PARAMETRIC DATA

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SREF =	38. 7360 Su	LIN. XMO	1.3	DOD THICKES					•		
			_	DOD INCHES				PCRCS =	504.000	ELEVON =	999
LREF =	4.7480 IN		_					AILRON =	.000	BOFLAP =	.000
BREF =	9.3670 IN	ICHES ZMRF	9: ≥	940 INCHES					-	DOLEN -	1000
SCALE =	.010D SC	ALE						SPDBRK =	,000		
OCALL -											
		RUN	NO. 29/0	RN/L =	1.D1 GRA	DIENT INTER	VAL = -5.0	0/ 5.00			
	•	KUN	NO. 237 U	101/2 -	1,01			-, .,			
					CLM	CBL	CYN	CY	CL	CD	PCRCS
MACH	ALPHA	BETA	ON	CA ·						.27483	594.15646
10,330	-10.799	.03948	27175	.22795	09276	.00223	-,00349	.01002	-,22423	•	
10.330	-5.345	.07508	17937	.19323	-,05503	.00001	00524	.01690	-,16059	.20910	503.27349
	=	-	98954	.15821	02444	.00035	00677	,00986	08960	,15617	503,31543
10,330	.024	.07940	• •	•	· ·	= -	00843	.00910	01012	,13583	503.55718
10.330	5,210	.09554	,09226	.13619	.01171	,00051	•			•	- · - · ·
10.330	10.440	.11035	.10699	.12076	.04558	-,00093	-,00998	.01326	.98334	13815	502.87408
•	- •	-	.20332	.11986	.08096	09415	00702	.01630	.16590	.16157	503,58876
10,330	15.642	.05617	-	-	=	*	00899	.00475	.27997	.22241	503.47327
10.330	29,792	.05342	.34969	.10855	.11137	00479	-	•	·=	00000	000000
								121-121-12	1272121212		

.00000

.00000

7,3680 INCHES

.00000

14-60 CFHT108 HODEL 32-OT (O T)N51 YAW LH

(RH117N) (18 MAR 74)

	REFEREN	ICE DATA		1					PARAMETRIC	DATA	
SREF = LREF = BREF = SCALE =	38.7360 SQ 4.7480 IN 9.3670 IN .0100 SC	ICHES YMRP	æ .0	680 INCHES 000 INCHES 940 INCHES				BETA = PCRCS = AILRON = SPOBRK =	.000 179,000 .000 .000	Q(PSF) = ELEVON = BDFLAP =	150,000 -20,000 .000
		RUN	NO. 31/0	RN/L =	1.02 GRA	DIENT INTER	RVAL = -5.0	00/ 5.00			
MACH	ALPHA	BETA	CN	CA .	CLM	CBL	CYN	CY	CL	CD	PCRCS
10,330	-10,640	00651	28763	.23107	08310	.00176	00001	.00400	-,24002	.28020	178.40525
19.330	-5,299	.02865	18358	.19561	05969	,00993	00232	,00877	16473	.21173	178,73014
10,330	132	.03702	07091	.16161	52442	.00064	-,00349	.00518	07954	.16197	178.65736
10,339	5.156	.03452	.02124	.13861	.00974	.00058	-,00382	.00084	.00870	.13996	178.74140
10.330	10,469	04086	,11354	.12275	.04251	.00006	00465	.00024	.08950	.14125	178,66862
10,330	15,597	.03136	.20402	.11163	.07773	00191	00444	.60301	.16650	.16237	178,46689
19,339	20,746	.04179	.33667	.10849	.11008	00162	00642	00287	.27641	.22071	178.43603
19,335	GRADIENT	00000	. מטעמם	.00000	.00000	.00000	.00000	.00000	םמפפפ.	.00000	.00900
SREF =	REFEREN 38,7360 SQ 4,7480 IN		= 7.3	: 680 INCHES				BETA =	PARAMETRIC	Q (PSF) =	150,000
_	7,1400 1	CHPS TMRP	= .0	DOD INCHES				PCRCS =	504. 000	ELEVON =	-20,000
20 <i>000 -</i>	9 367F TN		_	000 INCHES 940 INCHES:				PCRCS =	,000	ELEVON = EDFLAP =	-20,060 .060
BREF =	9.3670 IN .0100 SC	CHES ZMRP	_	940 INCHES					•		
		CHES ZMRP	= .9	940 INCHES	1.00 GRA	DIENT INTER	WAL = -5.0	AILRON = SPOBRK =	,000		
		CHES ZMRP	= .9	940 INCHES	1,00 GRA	CBL	VAL = -5,C	AILRON = SPDBRK = DD/ 5.00	,000 ,000 CL	BDFLAP =	,960 PCRCS
SCALE =	.0100 SC	CHES ZMRP ALE RUN P	= .9 NO. 32/0	940 INCHES				AILRON = SPOBRK =	,000 000	ODFLAP =	,000
SCALE = MACH 10,330	.0100 SC ALPHA -10,460	CHES ZMRP ALE RUN I	= .9 NO. 32/0	940 INCHES: RN/L =	ÇLM	CBL	CYN	AILRON = SPDBRK = DD/ 5.00	,000 ,000 CL	BDFLAP =	,960 PCRCS
MACH 10,330 10,330	ALPHA -10,460 -5,157	CHES ZMRP ALE RUN M BETA .02704	= .9 NO. 32/0 CN 28451	940 INCHES RN/L = CA .22672	CLM 06150	CBL ,00259	CYN 00263	AILRON = SPDBRK = 30/ 5.00 CY .00927	,000 ,000 CL 23862	6DFLAF = CD ,27460	, 999 PCRCS \$95,27946
MACH 10,330 10,330	ALPHA -10,460 -5,157 148	RUN N BETA .02704 .06472 .07014	= .9 NO. 32/ 0 CN 28451 18645 09689	RN/L = CA .22672 .19126 .15900	CLM 08150 04914	CBL ,50259 ,00129	CYN 00263 00465	AILRON = SPDBRK = 00/ 5.00 CY .00927 .01621	,000 ,000 CL 23862 16851	CD .27460 .20725	.000 PCRCS 505.27946 505.67897
MACH 10,330 10,330 10,330 10,330	ALPHA -10,460 -5,157 148 5,106	RUN N BETA .02704 .06472 .07014 .08796	= .9 NO. 32/ 0 CN28451 18645 09689 00512	RN/L = CA .22672 .19126 .15900 .13658	CLM 08150 04914 02307	CBL ,50259 ,00129 ,00172	CYN -,99263 -,99465 -,99597	AILRON = SPDBRK = DD/ 5.00 CY .00927 .01621 .01027	.000 .000 CL 23862 16851 09648	CD .27460 .20725 .15925	,000 PCRCS 505,27946 505,67897 505,45852
MACH 10,330 10,330 10,330 10,330 10,330	ALPHA -10,460 -5,157 -,148 5,106 10,319	RUN N BETA .02704 .06472 .07014 .08796 .11015	= .9 NO. 32/ 0 CN28451186450968900512 .09768	RN/L = CA .22672 .19126 .15900	CLM 08150 04914 02307 .01266	CBL ,50259 ,00129 ,00172 ,00157	CYN -,99263 -,99465 -,99597 -,99769	AILRON = SPDBRK = 30/ 5.00 CY .00927 .01621 .01927 .00907	.000 .000 .000 CL 23862 16851 09648 01726	CD .27460 .20725 .15925 ,13559	PCRCS 505.27946 505.67897 505.45852 505.80503
MACH 10.330 10.330 10.330 10.330 10.330 10.330	.0100 SC ALPHA -10,460 -5,157 -,148 5,106 10,319 15,652	RUN P BETA .02704 .06472 .07014 .08796 .11015 .05401	= .9 CN28451186450968900512 .09768 .19309	RN/L = CA .22672 .19126 .15900 .13658 .12005 .10942	CLM 08150 04914 02307 .01266 .04595 .58192	CBL ,50259 ,00129 ,00172 ,00157	CYN 00263 00465 00597 00769 00993	AILRON = SPDBRK = DD/ 5.00 CY .00927 .01621 .01027 .00907 .01410	.000 .000 CL 23862 16851 09648 01726	CD .27460 .20725 .15925 .13559 .13561	.000 PCRCS 505.27946 505.67897 505.45852 505.80503 505.84782
MACH 10,330 10,330 10,330 10,330 10,330	.0100 SC ALPHA -10,460 -5,157 -,148 5,106 10,319	RUN N BETA .02704 .06472 .07014 .08796 .11015	= .9 NO. 32/ 0 CN28451186450968900512 .09768	RN/L = CA .22672 .19126 .15900 .13658 .12005	CLM 08150 04914 02307 .01266 .04595	CBL .50259 .00129 .00172 .00157 00034 00367	CYN 00263 00465 00597 00769 00993	AILRON = SPDBRK = DD/ 5.00 CY .00927 .01621 .91027 .00907 .01410 .91987	.000 .000 .000 CL 23862 16851 09648 01726 .07460 .15640	CD .27460 .20725 .15925 .13559 .13561 .15746	,950 PCRCS 505.27946 505.67897 505.45852 505.80503 505.84782 505.35078

.24998 482.12857

.17522 483.79752

.12191 484.99879

.09011 483.88852

.08203 482.83786

,09857 482.52519

.16544 482.44115

.21449

-.01029

10.330

10,330

10,330

10,339

10.339

10.330

10.330

-10.256

-4,946

.235

5.745

10.831

16.922

21,213

GRADIENT

14-60 CENTIOS MODEL 32-OT (O T) N49 N50 PITCH DWN

(RH119N) (18 MAR 74)

-.32555

-.24310

-.15499

-.06714

,02562

.12212

.25747

.01720

.00339

-.00422

-.00288

~.00574

-,00029

-.00704

-.01005

.00026

			IA-60	CENTIUS P	KODEL 32-OI	(O I) NAS NO	O FILE DW	•	,	,	
	REFEREN	ICE BATA							PARAMETRIC	DATA	
	38,7360 S	a.in. XMRP	= 7.36	30 INCHES				BETA =	.000	Q (PSF) =	150,000
SREF =	4.7480 IN		• • •	00 INCHES				PCRCS =	167,000	ELEVON =	-20,000
LREF =	4.7480 IN 9.3670 IN			10 INCHES				AILRON =	.000	BDFLAP =	,000
BREF =	-0100 SC		- ,55					SPOBRK =	oae,		
SCALE =	.0100 30	LALE									
		RUN N	10. 347·0	RN/L =	1,02 GR	WIENT INTER	VAL = -5.	00/ 5.00			
МАСН	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD .	FCRCS
10,330	-10.336	00245	31624	,21437	07193	.50136	.09020	00007	-,27265	,26763	186,52662
10,330	-5.024	.00391	- 19756	.18228	04188	.00097	00050	00349	18084	.19888	183.93288
10,330	,932	.02074	09676	.15939	-,01415	.00028	00197	00377	09685	.15033	184.85741
10.330	5,377	02695	00482	.12520	.02205	.00039	00281	00633	01653	.12419	184.79210
10,330	19,711	.03541	.09771	10777	05621	.00038	00366	00748	.07597	.12405	182,30151
10,330	15,758	.03367	.19142	,09399	.08959	00038	09381	00823	.15870	.14245	181.91573
10,330	20,988	.04523	.33569	.09228	.12125	50015	00551	01268	.28036	.20640	181,45501
13,000	GRADIENT	. טטטטט	.00000	.05990	.00050	,00000	.00000	,00000	.00000	.00000	.00000
								٠			
			[A-6D	CFHT108 H	100EL 32-01	(O T) N49 N5	O PITCH DW	N	(RH120	9N) (18 H	IAR 74)
	REFEREN	NCE DATA					·		PARAMETRIC	DATA	
-			_ 7.26	BO INCHES				BETA =	.000	Q(PSF) =	150,000
SREF =	38,7360 \$6			30 INCHES		-		PCRCS =	469,000	ELEVON =	-20.000
LREF =	4,7480 IN			40 INCHES			-	AILRON =	900	BDFLAF =	,000
BREF =	9.367D IN		,55	45 1.4C/ILO				SPOBRK =	.000		
SCALE =	.0100 50	LALE						-			
		RUN N	ю. 35/O	RN/L =	1.01 GR	ADIENT INTER	RVAL = -5.	00/ 5.00			
MACH	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL.	CD	PCRC\$
PACIF	mer 1.75				00403	12/2/27/2	- 130306	กกรรด	32555	.24998	482.12857

-.85483

-.02504

.00371

.04266

.07255

,10337

,13412

.00555

.18802

.15360

.12254

.09638

.07575

.06194

.96107

-.00599

.00852

-.00316

.02195

.02800

.02082

.03714

.04371

.00485

-.36486

-.25730

-1.5349

-.95778

.04958

.14459

.29989

.02004

.00072

.00032

-,00007

-.00002

-.00101

-.00051

-.00061

-.000098

-.000006

-.00206

-,00289

-.00182

-.00421

-.00541

-.00041

1A-69 CFHT108 MODEL 32-OT (O T)N49 PITCH DOWN LH

(RH121N) (18 MAR 74)

			14 45					P	ARAMETRIC I	ATA	
SREF = LREF = BREF =	REFERENCE 38.7360 SQ.1 4.7480 INCP 9.3670 INCP .0100 SCAL	N. XMRP ES YMRP ES ZMRP	± .000	OD INCHES				BETA =	.000 (158.000 ((PSF) =	150,000 -20,000 .000
SCALE, =		RUN N	0. 36/0	RN/L =	.98 GRAD	IENT INTERV				CD	PCRCS
MACH 10,330 10,330 10,330 10,330 10,330 10,330	ALPHA -10.556 -5.213 123 5.205 10.507 15.633 20.833 GRADIENT	BETA .03674 .04999 .05049 .05326 .06220 .04992 .05539	CN306451898608198 .01952 .11921 .21113 .35327	.23189 .19706 .16332 .14005 .12233 .10923 .10726 .90000	CLM 08036 04854 02146 .01537 .04950 .08373 .11737	CBL .00135 .00089 00046 00072 00105 00176 00167 .00000	-,00259 -,00369 -,00467 -,00484 -,00607 -,00561 -,00720 ,00000	.00617 .00556 .00189 00057 00066 00175	-,25878 -,17117 -,08163 -,00223 ,08696 	.28411 .21350 .16350 .14042	174.77164 174.79760 174.47748 174.38244 174.30938 174.21435 174.19429 .00050
	,		• • •	a courting M	net 32-01 :	(O T)N49 PI	TCH DOWN LH	ı .	(RH122	4) (18 H	AR 74)
			I V-Or	CHITTO IN	OLC 42				PARAMETRIC	DATA	
SREF = LREF = BREF =	38.7360 SQ 4.7480 IN 9.3670 IN	.IN. XMRP CHES YMRP CHES ZMRP	.01	580 INCHES UGO INCHES 940 INCHES				BETA = PCRCS = AILRON = SPDBRK =	.090 446,000 .000 .000	Q(PSF) = ELEVON = BDFLAP =	150,090 -20,090 ,000
SCALE =	.0100 SC	ALE RUN	NO. 37/0	RN/L =	.99 GRA	DIENT INTER	RVAL = -5.0	00/ 5.00			
MACH 10,330 10,330 10,330 10,330 10,330 10,330	ALPHA -10.319 -5.034 .050 5.372 10.579 15.815 20.993 GRADIENT	BETA .11093 .08984 .09484 .08665 .10035 .07091 .97382 .00000	CN32708216901114701747 .08458 .16719 .33559	CA .21755 .18124 .15157 .12628 .10939 .09590 .09338 .00000	CLM 06970 03908 01124 .02494 .05888 .09315 .12397	09082 09170 00298 00335 00325 00377 00348 .00000	CYN0066100559007210075900792007920095700000	CY .02107 .01552 .01034 .00679 .00874 .00564 00000	CL 28282 20016 11160 02922 .06306 .15388 .27986	CO .27262 .19957 .15148 .12409 .12306 .14327 .20741	463.37953 462.94773

10,330

10,330

(RH123N) (18 MAR 74)

.04952

.14117

.26115

.00000

-.00429

-,00642

-.01251

.00000

-,09293

-.00162

-.00224

.00000

.11605 446.20468

.13695 446.57848

.19871 447.24121

,00000

.00050

			[A-60	CFH7108 M	DDEL 32-01	(O T) N49N52	ROLL		(RH123	N) (18 M	AN 14 3
	REFERE	NCE DATA							PARAMETRIC	DATA	
			= 7.36	80 INCHES				BETA =	.000	Q(PSF) =	150,000
SREF =	36,7369 \$0			DO INCHES				PCRCS =	158,000	ELEVON =	-20,000
LREF =	4,7480 1		· ·	40 INCHES				AILRON =	.000	BDFLAP =	.000
BREF =	9,3679 1		= ,99	4U INCHES				SPORK =	.000		
SCALE =	.0100 S	CALE									
		RUN I	NO. 38/ 0	RN/L =	.99 GRA	DIENT INTER	VAL = -5.	00/ 5.00			
	AL PALLA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	PCRCS
MACH	ALPHA	-,00906	30907	.22943	07984	.00015	.00102	-,00134	-,26195	.28203	158,97814
10,330	-10.527	01243	19309	.19525	04873	00097	.00117	50379	-,17445	.21207	158.04609
10,330	-5.241	09536	09502	.16101	02029	-,00580	.00683	-,01957	-,09512	.16995	158.00407
10,330	,G37	-,07335	00555	.13804	.01744	00563	.00419	-,01805	01833	.13693	157,98414
10,330	5,322	.01983	.10501	.11923	.04879	00282	00222	00751	.98127	.13652	157.98197
10.330	10,606	.01760	.20646	.10980	.08338	00273	00333	00612	.16917	.16145	157,87800
10,330	15,657	.01652	.35041	.10770	.11794	00268	00434	-,01333	.28904	,22548	157.80611
10,330	29.874 GRADIENT	-	.00000	.00000	,00000	.00000	.00000	.00000	.00000	.00999	.00000
			IA-60	CFHT108 M	DEL 32-OT	(O T) N49N52	ROLL		(RH124	N) (18 P	tar 74)
	REFEREN	NCE DATA							PARAMETRIC	DATA	
		D.IN. XMRP	= 7.36	80 INCHES				BETA =	.000	Q(PSF) =	150.000
SREF =	38,7360 50		•	OO INCHES	•			PCRCS =	446,000	ELEVON =	-20.000
LREF =	4,7480 II		•	40 INCHES		•		AILRON =	. כיבים	BOFLAP =	.000
BREF =	9,3670 IF		55	40 Incisca				SPDBRK =	.000		
SCALE =	,0100 SC	LALE									
	•	RUN I	NO. 39/0	RN/L =	.99 GRA	DIENT INTER	VAL = -5.1	00/ 5.00			
MACH	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	ÆD.	PCRCS
10,330	-10,389	09608	-,33578	.20770	07088	00839	.01059	-,91134	29282	,26484	446.49885
10,330	-5.114	24633	22825	.17590	03785	01582	.02122	93494	-,21166	.19555	446,20468
10,330	.199	08947	-,13577	,14705	00929	01007	.00697	01356	13628	.14658	445.86849
10,330	5,451	01587	04209	.12400	.02644	-,00738	. 000 06	00517	05367	.11944	445,74242
10.330	331		20150	443004	05013	- 00625	00203	00429	.04052	.11605	446,29468

.10654

.09294

.09240

.00000

.06130

.17333

.31488

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-,00118

-.01724

- (12551

.00000

10,670

15,930

20.914

GRADIENT

.05813

.09436

.12343

.00000

-.00625

-.00627

-.00609

,00000

(RH125N) (18 MAR 74

			17-67	CEHTILIS M	ODEL JE-OI	(O 1) N32 11	TCH OF N	•		,	
	REFERE	NCE DATA							PARAMETRIC	DATA	
SREF = LREF = BREF = SCALE =	38,7360 S0 4,7480 U 9,3670 U 9,3670 S0	NCHES YMRP NCHES ZMRP	= ,00	80 INCHES 09 INCHES 40 INCHES				BETA = PCRCS = AILRON = SPOBRK =	.000 158.000 000 000	Q(PSF) = ELEVON = BDFLAP =	.000 -20,509 000
		RUN !	NO. 40/0	RN/L =	1.00 GRA	DIENT INTER	VAL = -5.0	00/ 5,00			
MACH 10,330 10,330 10,330 10,330 10,330	ALPHA -10,555 -5,294 -,054 5,241 10,526 15,568	BETA 05043 05816 12072 12584 03011 00708	CN 29972 18457 07830 .01038 .11694 .22255	CA .23827 .29218 .16607 .14459 .12762 .12012	CLM 08452 05231 02534 .01281 .04492 .97943	CBL ,09045 -,09099 -,00514 -,09601 -,09251 -,00175	CYN .00379 .00424 .00859 .00807 .00079	CY 00811 01214 02359 02580 01506 01281	CL 25100 16513 07814 00288 .09166 .18215	CD .28914 .21835 .16615 .14493 .14684 .17544	PCRCS 158.35925 158.36024 158.31821 158.33927 158.27618 158.28616 158.19212
10.330	20,753 GRADIENT	-,00000	.36537 .00000	,11531 ,55555	,11363 ,00000	-,00164 ,00000	-,00237 ,00900	02917 .99999	.30081 .00090	.00000	,00000
			[A-60	CFHT108 H	ODEL 32-0T	(O T) N52 PI	TCH UP RI	ł	(RH126	N) (18 M	AR 74)
	REFERE	NCE DATA					-		PARAMETRIC	DATA	
SREF = LREF = GREF = SCALE =	38,7360 S6 4,7480 II 9,3670 II ,0100 S6	NEHES YMRP NCHES ZMRP	= .00	80 INCHES 00 INCHES 40 INCHES				BETA = PCRCS = ATURON = SPDBRK =	.000 446.000 000 .000	Q(PSF) = ELEVON = BDFLAP =	150,000 -20,000 -995
		RUN I	NO. 41/0	RN/L =	1.01 GRA	DIENT INTER	VAL = -5.0	10/ 5,00			
MACH 10.330 10.330 10.330 10.330 10.330 10.330	ALPHA -10.302 -5.280 128 5.107 10.588 15.596 20.808	BETA -,20918 -,34918 -,23561 -,12378 -,06077 -,07441 -,06718	CN30028196101032400949 .09922 .21089	CA .22843 .19367 .16517 .14242 .12479 .11572 .11302	08247 05236 02396 .01250 .94615 .07950	CBL 99654 01473 01045 99653 00371 99432 00393	CYN .01742 .02743 .01759 .00829 .00320 .00356	03154 05650 03770 02319 01658 01938 02603	CL 25459 17745 10288 02213 .07460 .17202 .29372	.27845 .21089 .16540 .14101 .14590 .16816 .23253	446.8 447.1 447.3 446.5 445.9 445.9

(RH127N) (18 MAR 74)

1A-68 CFHT188 MODEL 32-OT (O T)N49N52 ROLL

			1 ¥-60	Crnituo F	NOEC JE VI	(0 ())143/136					
	REFERENCE	DATA							PARAMETRIC	DATA	
SREF = LREF = BREF = SCALE =	38.7360 SQ.1 4.7480 INCH 9.3670 INCH .0100 SCAL	N. XMRP ES YMRP ES ZMRP	= .00	80 INCHES 00 INCHES 40 INCHES				BETA = PCRCS = AILRON = SPOBRK =	.000 158,009 .009 55,000	Q(PSF) = ELEVON = BDFLAP =	150,000 ,080 ,089
		RUN I	10, 43/0	RN/L =	1.00 GRA	DIENT INTER	RVAL = -5.0	00/ 5.00			
MACH 10,330 19,330 10,330 10,330 10,330 10,330	ALPHA -10,463 -5,222 -,071 5,169 10,434 15,654 20,824 GRADIENT	BETA 06575 07234 11461 08098 .00670 .02309 .01068 .00000	CN29610186880990200745 .10284 .21275 .36148 .00000	CA .23585 .20116 .16665 .14070 .12098 .11048 .10813 .00000	CLM 07087 04736 01862 .01694 .04671 .08235 .11424 .00000	CBL -,00391 -,00538 -,00760 -,00680 -,00368 -,00313 -,00354 ,00000	CYN .00612 .00623 .00819 .00459 00228 00402 00402	CY -,01087 -,01224 -,02155 -,01866 -,00721 -,00522 -,01317 ,00000	CL 24835 16780 09881 02010 .07939 .17505 .29942 .00000	CD .28570 .21733 .16677 .13946 .13672 .16379 .22957	PCRCS 158.78053 158.76050 158.77051 158.49836 158.58039 158.48836 158.43430 ,00000
		•	[A-60	CFHT108 M	ODEL 32-07	(O T) N49N52	ROLL		(RH128	N) { 18 P	IAR 74)
	REFERENCE	DATA							FARAMETRIC	DATA	
SREF = LREF = BREF = SCALE =	38.7360 SQ.1 4.7480 INCH 9.3670 INCH .0100 SCAL	ES YMRP	= .00	90 INCHES 90 INCHES 40 INCHES				BETA = PCRCS = AILRON = SPDBRK =	.000 446,000 .000 55,000	Q (PSF) = ELEVON = BOFLAP =	150,600 ,000 - ,000
		RUN F	D. 44/0	RN/L =	1.01 GRA	DIENT INTER	RVAL = -5.0	30/ 5.90			
MACH 10,330 10,330	-4.893	BETA 23072 33827 08806	CN 33594 23042 13766	CA .22169 .19129 .14788	06134 02648 01022	CBL -,01784 -,02224 -,01103	.02255 .02871 .00691 .00025	CY. 03460 04769 01284 00330	CL 29138 21327 13798 05341	CD .27767 .21025 .14757	PCRCS 447.35341 448.01171 448.13894 445.67224
10,330 10,330 10,330	10,628 15,864	-,01813 -,00305 -,01957 -,02065	04194 .06146 .17414 .33097	.12381 .10786 .09559 .09442	.02613 .05835 .09308 .12204	00836 00693 00761 00730	00193 00183 00261	00273 00273 00376 01077	.04052 .14137 .27590	.11734 .13955 .29696	446.28873 446.27478 446.55489

-.00434

,00223

.00324

-,00865

.01848

-.02865

.04984

21.042

GRADIENT

10.330

.00694

.01500

-,01249

1A-60 CENTIOS MODEL 32-OT (O T)NS2 PITCH UP	(RH129N)	(18 MAR 74
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	REFEREN	CE DATA		i				F	ARAMETRIC	DATA	
SREF = LREF = BREF = SCALE =	38,7360 SQ 4,7480 IN 9,3670 IN ,0100 SC	.IN. XMRP CHES YMRP CHES ZMRP	= .00	80 INCHES 80 INCHES 40 INCHES				BETA = PCRCS = AILRON = SPDBRK =	.000 158,000 .000 55,000	Q(PSF) = ELEVON = BDFLAP =	.000 .000
		RUN I	io. 45/0	RN/L =	1,00 GRA	DIENT INTER	VAL = -5.0	0/ 5.00			
MACH 10.330 10.330 10.330 10.330 10.330 10.330	ALPHA -10,514 -5,231 -,126 5,041 10,494 15,719 20,661 GRADIENT	BETA 11375 12485 16363 13277 03121 00301 00217 .00000	CN282281724907918 .01110 .12223 .23422 .37566	CA .24574 .20877 .17335 .14919 .12872 .12082 .11572 .50000	CLM 08466 05245 02406 .01123 .04246 .07782 .10798 .09000	CBL 00290 00440 00694 00632 00250 00164 00170	CYN ,00941 ,00958 ,01181 ,00855 ,00085 -,00154 -,00250 ,00000	CY01785021660293202714015010119401935 .00000	CL -,23270 -,15274 -,07879 -,00205 ,09674 ,19273 ,31066 ,00000	CD .29312 .22363 .17353 .14959 .14883 .17975 .24083	PCRCS 158,42431 158,38228 158,32029 158,25621 158,27618 158,08812 158,08812
			, IA-60	CFHT108 M	ODEL 32-OT	(O T)N52 P1	TCH UP		(RH139	N) (18 H	AR 74)
	REFEREN	CE DATA						1	PARAMETRIC	DATA	•
SREF = LREF = BREF = SCALE =	38.7360 96 4.7480 IN 9.3670 IN	CHES YMRP	s ,00	180 INCHES 199 INCHES 149 INCHES				BETA = PCRCS = ATLIRON = SPOERK =	.000 446.000 .000 55.000	Q(PSF) = ELEVON = BDFLAP =	150,000 ,000 ,000
•		RUN I	NO. 46/ 0	RN/L =	.1,00 GRA	DIENT INTER	VAL = -5.0	5.00			
MACH 10.330 10.330 10.330 10.330 10.330	ALPHA -10.282 -5.284 079 5.194 10.435 15.568	BETA341974369723551125970574307157	CN 29200 19102 09334 .00160 .10404 .21955	CA .24213 .21528 .16870 .14503 .12813 .11905	CLM 07756 04326 02401 .01140 .04316	CBL 01344 01849 01048 00645 00342 00426	CYN .02880 .03479 .01733 .00819 .00297 .00336	CY 05343 06666 03884 02401 01611 01871	CL -,24409 -,17039 -,09311 -,01154 ,07911 ,17954	CD .29036 .23196 .16883 .14458 .14486	PCRCS 447,24130 447,00314 447,46540 447,53117 446,24670 446,37278
10.330	20.713 GRADIENT	-,06188 .00000	.36831 .00000	.11569 . .00000	.10983 00000	00389 00000	.00167 .00000	02544 .00000	.39358 .00000	.23848 .00000	446,98910 .00000

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THER CENTION MODEL 32-OF (O. T.) NASNS2 ROLL

(ZH131N) (12 APR 74)

-.04569

.05107

.14945

.28513

.01280

.11924 447.61938

.11912 446.63891

.14164 446,55485

.21172 446.82152

-.00878 -.03849

,00032

-,00126

-.00031

-.000023

-,00231

-.09461

-.00400

-.00595

-.01182

,99275

			C9-41	CEHTIOS M	ODEL 32-01	(O T) N49N52	ROLL		(ZH131	N) (12 A	
	REFERENCE	E DATA							PARAMETRIC	DATA	
SREF =	38.7360 SQ.1	HES YMRP	= .000	O INCHES O INCHES				BETA = PCRCS = AILRON =	.999 158,999 -15,000	Q(PSF) = ELEVON = BDFLAP =	.000 .000 .000
BREF = Scale =	9.3670 INCH .0100 SCAL		554	.5 1(d)125				SPCBRK =	.000		
		RUN N	0. 48/ 9	RN/L =	1.00 GR/	DIENT INTER	VAL = -5.0	30/ 5.00			
MACH	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL.	CD	PCRCS
10.330	-10,619	.01027	28953	.22634	08892	00356	.00052	99942	-,24286	.27582	158.73850
=	-5.373	-,00258	16133	.19441	05493	00413	.00101	00248	16233	.21053	158.49432
10,339	046	09541	-,98523	.16916	-,02428	00801	.00685	01884	98519	.16023	158.32529
10,330	•	09225	.00341	.13803	.01378	00830	.00525	01945	00923	.13777	158,16219
10,330	5,250	-	.11303	.12102	.04397	00594	00090	00835	.08923	.13950	158.18214
10.330	10.442	01636	.22450	.11238	.07972	00637	-,00217	99685	.18569	.16896	157.84593
10.330	15,798	-,01415	-	.11093	.19798	00858	00184	01379	.30270	.23272	157,65793
10.330	20.663 GRADIENT	04708 .05000	.36535 .00000	.00000	.00000	,00000	,00000	.00000	.06000	.00005	,00000
			1A-60	CFHT108 H	100EL 32-0T	(O T) N49N52	ROLL		(ZH132	N) (12 A	PR 74)
	REFERENCE	E DATA							PARAMETRIC	DATA	
			_ 7.366	INCHES			;	BETA =	.000	Q(PSF) =	150,000
SREF =	38.7360 SQ.1		•	D INCHES				PCRCS =	446,000	ELEVON =	.000
LREF =	4.7480 INC		•	O INCHES				AILRON =	-15,000	BDFLAP =	.000
BREF =	9.3670 INCH		= .994	10 INCHES			•	SPDBRK =	.000	•	
SCALE =	.010D SCAL	-E	•					5.55	•		
		RUN N	0. 49/0	RN/L =	1,00 GR/	WIENT INTER	VAL = -5.	00, 5,00		•	
MACH	ALPHA .	BETA	CN	CA	CLM	CBL	CYN	CY	ÇL	CD	PCRCS
10,330		06622	31979	,20432	07829	01238	.00946	00890	27717	.25922	447.14326
10,330	-4.979	21561	-,21112	.17236	04174	01893	.01917	-,02932	19536	.19003	447.18521
10,330	.116	09774	12982	.14559	01343	01282	.00740	01531	-,13012	.14532	446.98910

.12391

,19767

.09566

.09583

-.00525

-.93430

,07215

.18233

.34196

.01596

-.09774

-,02222

-,02100

-.05101

-.08711

.02313

.116

5.385

10,620

15.778

20.949

GRADIENT

.02273

.05442

.08823

.11501

.00556

-.00991

-,00936

-.01039

-.01242

1A-60 CFHT108 MODEL 32-OT (O T)N49N52 ROLL

(ZH133N) (12 APR 74)

000	CDC	NCE	DAT	
REF	E TE	MLE	LAI	^

PARAMETRIC DATA

	REFER	ENCE DATA		•							
SREF 2	38.736D :	SQ.IN. XMRP	= 7,36	80 INCHES				BETÀ =	.000	Q(PSF) =	150,000
LREF =	4.7480		= .00	00 INCHES				PCRCS =	158,000	EFEAGH =	, פטפ
BREF =	9.3670		. 99	40 INCHES				AILRON =	5,000	BDFLAF =	.555
	.0199	•		!				SPOBRK =	.000		
SCALE =	•4144	J4722									
		RUN	NO. 51/ 0	RN/L =	.98 GR/	DIENT INTER	VAL = -5.	00/ 5.00			
MACH	ALPHA	BETA	CN	CA 1	CLM	CBL	CYN	CY	CL	CD	PCRCS
10,33		00354	27533	.21571	-,982 96	00002	.00108	.00078	-,23150	.26220	158.39434
10,33		01478	-,17535	.18622	05101	00196	.90193	00219	15739	.29163	158,48836
10.33			08643	.15449	02188	00617	.00714	01707	08611	.15467	158,48836
10.33			00264	.13256	.01531	00626	.00500	-,01733	-,01471	.13177	158,37436
10,53		·	.10158	.11612	.04468	-,90316	60146	-,00641	.07888	,13259	158,61442
10.33			.20837	.19691	.07842	-,00276	00250	00451	.17187	.15908	158.65644
10.33	· .		.34676	.10433	.10879	00204	00374	01183	.28735	.22935	158,61442
	GRADIENT	.00000	.00000	.00000	.00000	.60000	.00000	.00000	.00000	.00000	,00000
		, .	1A-60	CFH1198 M	ODEL 32-01	(O T) N49N52	! ROLL		(ZH134	N) (12 /	(PR 74)
								•			
	REFER	ENCE DATA					÷		PARAMETRIC	DATA .	
		-0 -11 -14455	716	on turuće		•		BETA =	.000	Q (PSF) =	150,600

								-			
SREF =	38,7360 S	g_IN. XMRF	· = 7.3	680 INCHÉS		•		BETA =	.000	Q (PSF) =	150,600
	4.7480 1			1000 INCHES				PCRCS =	446,000	ELEVON =	.000
LREF =	-			940 INCHES				AILRON =	5,000	BDFLAP =	.000
BREF =	9.3670 II	NCHES ZMRF	• • • • •	1940 INCHES				SPOBRK =	.000		
SCALE =	.0100 S	CALE						SEDDICK -	.000		
		RUN	NO. 52/ 0	RN/L =	.98 GRA	DIENT INTER	VAL = -5.	00/ 5.99			
MACH	ALPHA	BETA	ON	CA ·	CLH	CBL .	CYN	CY	CL	CD	PCRCS
		09141	31122	.19405	07244	00970	.01082	01005	27151	,24657	445.54638
10,330		22124	-,21037	.16399	03894	01585	.01979	02932	-,19536	,18162	445,88255
10,330		•		.13902	01031	-,01102	.00828	01313	13316	.13892	446.39276
10,330		- 10518	13306		-	90766	.00057	00228	05289	.11181	446.16277
10.330	5,403	01634	04204	.11628	.02463	-		•	.93783	11040	446.52689
10.339	10.555	-,00614	.05742	10160	.05536	-,00656	00125	00218			-
10,339	15,763	02571	.16696	.08976	.98826	00736	00089	-,00330	.13542	.13151	446.61093
10.330		- 02546	.31134	.08838	,11558	00606	00186	-,01009	.25948	.19343	446.17670
10,550	GRADIENT	.02413	.01541	00498	.00553	.00096	00229	.00323	.01240	00851	.58377

1A-60 CFHT108 MODEL 32-OT (O T)N49N52 ROLL

(ZH135N) (12 APR 74)

	PARAMETRIC DATA
NCE DATA	, and a second

	REFEREN	ICE DATA									
SREF = LREF = BREF = SCALE =	38,7360 50 4,7480 IN 9,3670 IN ,0100 50	CHES YMRP	= .00	80 INCHES 00 INCHES 40 INCHES				BETA = PCRCS = AILRON = SPDBRK =	.000 158.000 10.000 ,000	Q(PSF) = ELEVON = BDFLAP =	150.000 -20.000 .000
		RUN N	D. 54/ 0	RN/L =	1.01 GRA	DIENT INTER	VAL = -5.0	10/ 5.00			
MACH 10,330 10,330 10,330 10,330 10,330 10,330	ALPHA -10.353 -5.269 015 5.285 10.449 15.678 20.849 GRADIENT	BETA 05997 04680 10821 07441 .00408 .01545 .01783 .00000	CN30931200471021100939 .09863 .20645 .34490 .00000	CA .22944 .19697 .16037 .13760 .11865 .10943 .10651 .00000	CLM 07426 04574 01886 .01809 .04820 .98335 .11616 .00000	CBL .00454 .00206 00480 00506 00264 00255 00199 .00000	CYN .00444 .00393 .00409 .00448 00175 00292 00405 .00000	.00213 00213 00414 01935 01772 00775 00573 01318	CL 26304 18153 10207 02202 .07547 .16919 .28356	.28130 .21455 .16040 .13615 .13457 .16114 .22196	FCRCS 159.08666 159.12868 158.98256 158.91857 158.72849 158.49836 158.32029 .00000
			IA-60	C FHT108 ►	OCEL 32-07	(O T) N49N52	ROLL		(ZH136		PR 74)
	REFEREN	ICE DATA							L WINNIE 11217	. שוח	
SREF = LREF = BREF = SCALE =	38,7360 S0 4,7480 IN 9,3670 IN ,0100 S0	ICHES YMRP	= .00	80 INCHES 00 INCHES 40 INCHES				BETA = PCRCS = AILRON = SPCBRK =	,000 446,000 10,000 ,000	Q (PSF) = ELEVON = BDFLAP =	150,000 -20,000 ,000
		RUN N	io. 55/ ⁰	RN/L =	1.01 GRA	DIENT INTER	VAL = -5.0	30/ 5.00			
*	44 ED14	BETA	CN CN	CA	CLM	CBL	CYN	CY	CL	CD	PCRCS
MACH	ALPHA -10.370	14512	34518	.20969	06544	99555	.01419	01296	~.30180	,26840	446,89196
10,330 10,330	-5.084	31209	-,24198	.17893	93317	01529	.02589	04373	22518	.19967	447.51718
10.330	.138	10195	14247	.14663	-,00779	00904	.00800	91491	14282	.14628	446.30276
10.330	5,451	02067	04886	,12172	.02730	00688	.00060	-,00511	06021	.11652	446,41480
10.339	10.639	00591	.05794	.10587	.95691	00615	-,99162	00452	.03653	11457	446.37278
10.330	15.913	-,02769	.17013	.09385	.09387	00698	-,00094	00579	.13788	.13690	446,42883
10.330	20.904	02805	.30976	.09133	.12241	09576	09181	01242	.25678	.19584	445,99475

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GRADIENT

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TA-60 CFHT108 HODEL 32-OT (O T)N49N52 ROLL

(RH137N) (18 HAR 74)

				i							
	REFEREN	ICE DATA							PARAMETRI	DATA	
SREF =	38,7360 56	.IN. XNRP	· = 7,30	580 INCHES				BETA =	.000	Q(PSF) =	150.000
LREF =	4.7489 1	CHES YMRP	= .00	DOD INCHĖS		•		PCRCS =	158,000	ELEVON =	.000
BREF =	9,3670 1	ICHES ZMRP	= .99	940 INCHÉS				AILRON =	15,000	BCFLAP =	.000
SCALE =	,0100 SC	ALE		!				SPDBRK =	.999		
•		RUN	NO. 13/ 0	RN/L =	1.00 GR	ADIENT INTER	RVAL = -5.	00/ 5.98			
MACH	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY -	CL	CD	PCRCS
10,330	-10,573	03661	28721	.22149	08511	.00288	.00171	00220	24169	.27042	156,77392
10,330	-5.301	93537	-,18333	18925	-,05158	.00009	.00216	00436	÷,16506	.20537	156,38486
10,330	095	10320	-,08860	.15688	02331	00476	.00684	-,01822	-,08834	.15702	155.86798
10,330	5,274	07724	-,00065	.13526	.01435 -	00439	.00387	-,01707	01398	,13463	155.79645
. 10,330	10,428	.00545	.10664	11838	.04429	00133	00230	00752	.08345	.13573	155,77408
10.330	15,730	.03385	21692	.10904	.07920	-,00004	00453	00560	,17924	.16376	155,43780
10.330	20,805	.04978	35945	.10841	.10865	.00176	00569	-,01290	.29751	.22901	155.58354
	GRADIENT	.00000	.00000	.00000	.00000	.00000	.ספטסס	.00000	.60000	.00000	. טסטטט
					-				•		
			IA-60	3 CFHT106 M	ODEL 32-01	(O T) N49N52	ROLL		(RH136	IN) (18 M	AR 74)
	REFEREN	CE DATA							PARAMETRIC	DATA	
SREF =	38,7360 SQ	.IN. XHRP	= 7.36	580 INCHES				BETA =	.000	Q(PSF) =	150.000
LREF =	4.7480 IN		= .00	DO INCHES				PCRCS =	446.000	ELEVON =	.000
BREF =	9.3670 IN			940 INCHES				AILRON =	15.000	BDFLAP =	.000
SCALE =	,0100 SC		•			·		SPOBRK =	.000		
		RUN I	NO. 14/0	RN/L =	1.00 GR/	DIENT INTER	VAL = -5.	00/ 5.00			
			-							CD	PCRCS
MACH	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	-	444,66354
10.330	-10,330	14027	31255	.19720	07290	-,00699	.01248	-,01676	27212	,25005	
10.330	-5.043	28251	21913	.16596	03902	01594	.02240	54139	20369	.18458	445,44899
10,330	.123	11924	13412	.13865	01032	00970	10800.	01411	13442	.13836	445.26577
10,330	5.426	02407	04123	.11616	.02466	00629	.00025	00314	05203	.11174	445,68611
10.330	10,721	09555	.06429	.10123	.05576	00484	00198	-,00307 -,00454	.04434	.11142	-
10,330	15.836	91727	.17410	.08933	.08824	00495	00186	00454	.14312	.13345 .19986	445,44800 445,84051
10.330	20,893	00176	.32918	.09085	.11559	00260	00326	01194	.26672		445,84001 00000
	GRADIENT	. פטטטט	.00000	. טטטטטט	,00000	.00000	מספטם.	.00060	.00000	.00000	. UUUUN

.11414 468.76396

.08506 469.22966

.98357 467.25366

.09808 467.85495

.16318 468.91912

.02894

-.00991

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-4.933

,298

5,668

10,834

16,060

25.998

GRADIENT

.00563

.02000

.03533

.03667

.56902

.00284

-.14480

-.05176

.05389

.14942

.29799

.01882

			IA-60	CFHT108 M	ODEL 32-01	(O T) N49N50	PITCH DWN		(RH135	N) (18)	(AR 74)
	REFEREN	ICE DATA							PARAMETRIC	DATA	
****	38,7369 \$0	.in. xmrP	= 7.36	80 INCHES				BETA =	.000	G(PSF) =	150.000
SREF =	4.7489 IN		-	OD INCHES				PCRCS =	167.000	ELEVON =	,000
LREF =	9,3679 IN		-	40 INCHES				AILRON =	15.000	BOFLAP =	.000
BREF ≃	,0195 S C		• • • • • • • • • • • • • • • • • • • •	4D 1.1.C.1.C.0				SPOBRK =	.000		
SCALE =	10100 50	ALC				-					
		•	. 15/0	RN/L =	.97 GRA	DIENT INTER	VAL = -5.0	20/ 5.00	•		
MACH	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	PCRCS
10.330	-19,363	-,02553	-,29388	,20841	07664	,00418	.00036	00143	-,25159	,25797	167.09773
10,330	-5,562	01214	-,18649	.17789	-,04549	.00231	00534	00388	-,17006	.19365	166,98676
10,330	028	,01130	08348	.14756	01868	.55147	-,00216	00371	08340	.14760	167.12340
10,330	5,479	.02263	.00526	.12345	.01974	.00166	-,00321	-,00572	00655	.12339	167,02879
10.330	10,559	.03624	.10224	.10755	,05998	.99227	-,00420	-,00758	.08080	.12447	167.00782
10.339	15,746	.05983	.25066	ຸດ9512	.08373	.50237	00521	-,00773	.16732	.14601	167.55782
10,330	20,695	.07772	.34288	.U9417	.11585	.00439	00690	01323	.28758	.20982	167.93933
,	GRADIENT	.00000	.00000	.00000	.00000	,00000	.00000	.00000	.00000	.00000	.09990
			IA-60	CFHT108 M	ODEL 32-OT	(O T):N49N50	PITCH DWN		(RH140	IN) (18 N	IAR 74)
	REFEREN	CE DATA							PARAMETRIC	DATA	
	74 7760 80	.IN. XMRP	= 7,366	BO INCHES				BETA =	.טפט	Q(PSF) =	150,000
SREF =	36,7360 59		-	O INCHES		-	-	FCRCS =	469,000	ELEVON =	,000
LREF =	4,7480 IN 9,3670 IN	· · ·		10 INCHES				AILRON =	15,000	BDFLAP =	,000
BREF =	9.3610 SC	•·	50	43 (1.Q.ES				SPDBRK =	.000		
SCALE =	0100 SC	ALE					4				
		RUN N	0. 17/0	RN/L =	.98 GRAI	DIENT INTER	VAL = -5.0	טט. 5 עסר	•		
MACH	ALPHA	BETA	CN CN	CA	CLH	CBL	CYN	CY	CL	CD .	PCRCS
10,330	-10,129	02295	33807	.17847	05760	,00258	. 20099	00011	-,30141	.23514	467.87638
10.330	-4.933	00921	-,24327	.14559	-,02574	.00153	.00003	-,00100	22985	.16597	468.61167

,00042

,00094

.00137

.00121

.00304

-.00021

.00406

.03966

.07109

.09901

.12414

.00570

.11489

.09062

.07479

.05995

.06542

-,00587

-,00133

-,00322

-.00456

-.00565

-.00943

-,00006

-.14540

-.06046

.03878

,12725

,25655

.01614

-.00120

-.00272

-.00383

-,00418

-,00633

-.00024

(RH141N) (18 MAR 74)

1A-60 CFHT1DB MODEL 32-OT (O T) N49N5D PITCH DWN

				*							
	REFEREN	ICE DATA		•					PARAMETRIC	DATA	
SREF = LREF = BREF = SCALE =	38.7360 SQ 4.7480 IN 9.3670 IN .0100 SC	ICHES YMRP	= .0 0	80 INCHES 000 INCHES 40 INCHES				BETA = PCRCS = AILRON = SPCBRK =	.000 167,000 000 000	Q(PSF) = ELEYON = BDFLAP =	000,001 000, UCO,
		RUN I	18/0	RN/L =	,98 GRA	DIENT INTE	RVAL = -5.9	00, 5,00			
MACH	ALPHA	BETA	CN .	CA	CLH	CBL	CYN	CY	CL	CD	PCRCS
10.330	-10,363	01136	29366	.20760	07757	,00110	.00018	.00905	-,25153	.25704	167.07983
10.330	-5.064	-,00204	18563	.17816	-,54691	.00083	- 00096	00274	16918	.19385	166.81864
10.330	.084	.00562	08639	.14779	01582	99928	00153	00394	08651	.14766	166,59796
10,330	5,459	.01383	.00086	.12384	.02118	.00910	00275	00624	01092	.12336	166,59338
10,330	10.520	.52356	.09746	.19767	.05250	.00024	00361	00694	.07616	.12366	166,21965
10.330	15.843	.02590	.19518	.09468	.08699	00029	00414	00859	.16192	.14437	166.26164
10.330	20.840	.03999	.33237	.09264	.11425	00056	00515	01258	.27767	.20482	166.24967
10.334	GRADIENT	.00000	.00000	.00000	.00000	, סטטטסס	.00000	פסטסם.	.00000	.00000	.00000
			1A-60	CFHT108 M	DOEL 32-01	(O T) N49N5(PITCH DWN		(RH142	N) (18 H	IAR 74)
	REFEREN	CE DATA	1A-60	CFHT108 M	DDEL 32-07	(O T) N49N50	PITCH DWN		(RH142		
sref =	REFEREN			CFHT108 M	00EL 32-07	(O T) N4 9N50	3 PITCH DWN	BETA =	PARAMETRIC	DATA Q(PSF) =	159,000
sref = lref =		I.IN. XMRP	= 7.36		00EL 32-07	(O T) N4 9N50) PITCH DWN	PCRCS =	PARAMETRIC .000 469.000	Q(PSF) = ELEVON =	
	38.736D SG	I.IN. XMRP	= 7.36 = .99	80 INCHES	00EL 32-07	(O T) N49N50) PITCH DWN	PCRCS = AllRON =	.000 469.000	DATA Q(PSF) =	159,000
LREF =	38.736D SQ 4.7480 [N	I.IN. XMRP ICHES YMRP ICHES ZMRP	= 7.36 = .99	80 INCHES	00EL 32-07	(O T) N49N50	PITCH DWN	PCRCS =	PARAMETRIC .000 469.000	Q(PSF) = ELEVON =	.000 .000
LREF = BREF =	38.7360 SG 4.7480 (N 9.3670 IN	I.IN. XMRP ICHES YMRP ICHES ZMRP	= 7.36 = .00 = .99	80 INCHES			PITCH DWN	PCRCS = AILRON = SPDBRK =	.000 469.000	Q(PSF) = ELEVON =	.000 .000
LREF = BREF = SCALE =	38,7360 SG 4,7480 [N 9,3670 IN ,0100 SC	I.IN. XMRP ICHES YMRP ICHES ZMRP ALE RUN N	= 7.36 = .00 = .99	80 INCHES 90 INCHES 40 INCHES RN/L =	.98 GRA	DIENT INTER	RVAL ≈ -5.	PCRCS = AILRON = SPDBRK =	.000 .000 469.000 .000 .000	Q(PSF) = ELEVON =	
LREF = BREF = SCALE =	38,7360 SG 4,7480 [N 9,3670 IN .0100 SC	I.IN. XMRP ICHES YMRP ICHES ZMRP IALE IRUN N	= 7.36 = .00 = .99 KO, 19/0	80 INCHES 80 INCHES 40 INCHES RN/L =	.98 GRA	DIENT INTER	?VAL ≈ -5. !	PCRCS = ATLRON = SPDBRK = DD/ 5.00	PARAMETRIC .000 469.000 .000 .000	Q(PSF) = ELEVON = BDFLAP =	.000 .000 .000
LREF = BREF = SCALE = MACH 10,330	38,7360 SG 4,7480 [N 9,3670 IN .0100 SC 	A.IN. XMRP ICHES YMRP ICHES ZMRP IALE RUN N BETA ,00532	= 7.36 = .00 = .99 NO, 19/0	80 INCHES 90 INCHES 40 INCHES RN/L = CA .17804	.98 GRA CLM 05603	DIENT INTER CBL 00032	CYN -,00016	PCRCS = AILRON = SPDBRK = DD/ 5.00 CY .00472	.000 469.000 .000 .000 .000	Q(PSF) = ELEVON = BDFLAP = CD .23651	159,000 ,000 ,000
LREF = BREF = SCALE = MACH 10,330 10,330	38,7360 SG 4,7480 [N 9,3670 IN .0100 SC ALPHA -10.144 -4,922	R.IN. XMRP ICHES YMRP ICHES ZMRP	= 7.36 = .00 = .99 NO, 19/0 CN 34780 25146	80 INCHES 90 INCHES 40 INCHES RN/L = CA .17804 .14656	.98 GRA CLM 05603 02462	DIENT INTER CBL 08032 00914	CYN 00018 .00004	PCRCS = AILRON = SPDBRK = DD/ 5.00 CY .0047200243	.000 469.000 .000 .000 .000 .000 CL 31101 23796	Q(PSF) = ELEVON = BDFLAP = CD .23651 .16760	159,000 ,000 ,000 PCRCS 468,19127 468,59492
HACH 10,330 10,330	38,7360 SG 4,7480 [N 9,3670 IN .0100 SC ALPHA -10.144 -4,922 ,319	R.IN. XMRP ICHES YMRP ICHES ZMRP	= 7.36 = .00 = .99 IO, 19/0 CN347802514615348	80 INCHES 90 INCHES 40 INCHES RN/L = CA .17804 .14656 .11634	.98 GRA CLM 05603 02462 .00518	CBL 00032 00014 00019	CYN 00018 .00004 09205	PCRCS = AILRON = SPDBRK = DD/ 5.00 CY .004720024300209	PARAMETRIC .000 469.000 .000 .000 .000 .000 .000 .000 .00	Q(PSF) = ELEVON = BDFLAP = CD .23651 .16760 .11548	159,000 .996 .000 PCRCS 468,19127 468,59492 469,87286
HACH 10,330 10,330 10,330	38,7360 SG 4,7480 [N 9,3670 IN .0100 SC ALPHA -10.144 -4,922 .319 5,652	BETA .0053201029 .01431	= 7.36 = .00 = .99 IO, 19/0 CN34780251461534806085	80 INCHES 90 INCHES 40 INCHES RN/L = CA .17804 .14656 .11634 .09172	.98 GRA CLM0560302462 .00518 .04144	CBL00032000140001900035	CYN 00018 .00004 09205 09260	PCRCS = AILRON = SPDBRK = DD / 5.00 CY .00472002430020900469	CL 31101 23796 15413 06959	Q(PSF) = ELEVON = BDFLAP = CD .23651 .16760 .11548 .U8528	PCRCS 468.19127 468.59492 469.87286 467.61542
HREF = 8REF = 8CALE =	38,7360 SQ 4,7480 [N 9,3670 IN .0109 SC ALPHA -10.144 -4,922 .319 5,652 10,852	RUN N BETA .0053201029 .01268 .01431 .52251	= 7.36 = .00 = .99 KO, 19/0 CN34780251461534806085 .04649	80 INCHES 90 INCHES 40 INCHES RN/L = CA .17804 .14656 .11634 .09172 .07494	.98 GRA0560302462 .00518 .04144 .07365	CBL0003200014000190003500022	CYN00018 .00004092050926009342	PCRCS = AILRON = SPDBRK = DD/ 5.00 CY .00472002430046900556	CL 31101 23796 15413 96959 .03155	Q(PSF) = ELEVON = BDFLAP = CO .23651 .16760 .11548 .08528 .08235	159.000 .000 .000 PCRCS 468.19127 468.59492 469.87286 467.61542 468.51085
HREF = 8REF = 8CALE =	38,7360 SQ 4,7480 [N 9,3670 IN .0109 SC ALPHA -10.144 -4,922 .319 5.652 10.852 16,108	BETA .0053201029 .01268 .01431 .52251 .02127	= 7.36 = .00 = .99 KO, 19/0 CN34780251461534806085 .04649 .14170	80 INCHES 90 INCHES 40 INCHES RN/L = CA .17804 .14656 .11634 .09172 .07494 .05931	.98 GRA CLM0560302462 .00518 .04144 .07365 .10229	CBL000320001400019000350002200070	CYN00018 .0000400205002600034200379	PCRCS = AILRON = SPDBRK = DD/ 5.00 CY .0047200243004690055600666	CL31101237961541396959 .03155 .11968	Q(PSF) = ELEVON = BDFLAP = CD .23651 .16760 .11548 .08528 .08235 .09630	PCRCS 468.19127 468.59492 469.87286 467.61542 468.51085 467.89699
HREF = 8REF = 8CALE =	38,7360 SQ 4,7480 [N 9,3670 IN .0109 SC ALPHA -10.144 -4,922 .319 5,652 10,852	RUN N BETA .0053201029 .01268 .01431 .52251	= 7.36 = .00 = .99 KO, 19/0 CN34780251461534806085 .04649	80 INCHES 90 INCHES 40 INCHES RN/L = CA .17804 .14656 .11634 .09172 .07494	.98 GRA0560302462 .00518 .04144 .07365	CBL0003200014000190003500022	CYN00018 .00004092050926009342	PCRCS = AILRON = SPDBRK = DD/ 5.00 CY .00472002430046900556	CL 31101 23796 15413 96959 .03155	Q(PSF) = ELEVON = BDFLAP = CO .23651 .16760 .11548 .08528 .08235	159.000 .000 .000 PCRCS 468.19127 468.59492 469.87286 467.61542 468.51085